Telephone Engineer

WITH WHICH IS CONSOLIDATED THE WESTERN TELEPHONE JOURNAL
ESTABLISHED 1902

VOL. VIII | CHICAGO, DECEMBER, 1912 | NO. 6

PUBLISHED MONTHLY BY THE
ELECTRICITY MAGAZINE CORPORATION
Monadnock Building, Chicago.

Ed. J. Mock and Paul H. Woodruff, Editors.
TELEPHONES: HARRISON 3014—AUTOMATIC 61028.

LONDON OFFICE.....36 Maiden Lane, Covent Garden
S. RENTELL & Co., Representatives.

Entered as second-class matter May 26, 1909, at the postoffice at Chicago, Illinois, under Act of March 3, 1879.

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico	Per year,	$2.00
Canada	Per year,	2.50
Foreign countries within the Postal Union	Per year,	3.00
Single Copy		.20

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CHICAGO'S LATEST TELEPHONE REPORT.

AFTER many months of hard study Prof. E. W. Bemis has submitted to the city council committee on gas, oil and electric light of Chicago, his report on the Chicago Telephone Company. His conclusion is that a reduction of the company's rates in the city can be fairly made in the sum of $700,000 per annum.

The Chicago Telephone Company has answered the Bemis report after a study of approximately thirty days. The answer is a thirty-two-page booklet which notes exceptions to every important claim of the report.

We have made no attempt to print, in full or in abstract, either the Bemis report or the company's answer. The report is voluminous, full of deductions based on conditions peculiar to Chicago, and certainly not final. Therefore it is of little value to operating companies in other communities, and of small interest even to students of rates, so long as its conclusions are plausibly questioned. And it must be admitted that the company has succeeded in casting considerable doubt upon Mr. Bemis' figures. When this doubt has been finally removed it will be time to enter the results of the investigation upon our records.

The spectacle of an expert investigator building long columns of figures upon a basic unit of what the Kentucky Supreme Court recently called "delusive exactness" is an inevitable result of our present lack of a really definite base for telephone rate-making. Therefore it is no reflection on Prof. Bemis; he merely furnishes the present specific example. He assumes a figure of his own because the figure of record "seems too high," and on his assumption erects an account which may, within possibility, carry his result far above or below the elusive correct figure.

It is, of course, impossible to determine by a mere reading whether this or any other report is based on sane assumptions. In at least one particular, however, Prof. Bemis has laid himself open to criticism.

After the Jackson report had been discarded by the city, the Hagenah report had been accepted in its incomplete state, and Prof. Bemis had been employed to conduct the third successive investigation, the company took steps to establish an uncontrovertible basis for the work by ordering an appraisal of its property. For this work it chose Messrs. H. M. Byllesby and Company and Bion J. Arnold. Their international reputation and experience in handling vast public utility properties should make their figures final.

Yet Prof. Bemis has presumed not only to question those figures, but to alter some of them to suit his own conception of values. As this investigation

is, so far as we can learn, his first experience with telephone properties, his assurance is quite remarkable.

The question of "value new" appears to have troubled Prof. Bemis to a considerable extent. He does not see why because certain properties of the company (mostly real estate) have appreciated, the company should be allowed to profit thereby. In this attitude he not only goes counter to established practice, but actually places a premium on inefficient and uneconomical management. As we have held before, if a public utility be not credited with the fruits of its good management, there exists no logical reason for the exercise of special care and foresight in such management, whose application is obviously more difficult than indifferent and lax management. This question of "value new" is one of the points of difference between Prof. Bemis and the Byllesby-Arnold report.

Other factors upon which the investigator seems to have novel views are going value and depreciation. Because the public of today wants the telephone and insists upon having it, and because appraisals are made on a present replacement basis, he concludes that little sales expense would be involved in building up a full list of subscribers to a new plant, imagining the old one to have been utterly annihilated. He thus ignores the very real money which was actually expended in establishing the business years ago. In this, also, his views are contrary to the established practice of commissions and courts.

Without going into figures, it may be stated that Prof. Bemis' handling of the vital question of depreciation is also open to discussion. We would urge him to a consideration of the homely analogy, not infrequently used, of a suit of clothes. While repairs, constituting maintenance will serve to keep the suit in good order for a considerable time, the day comes when it must be wholly replaced by a new suit, and is of no further value except for its material—the "scrap" value. That is depreciation. Or it may be expedient, and good practice, to replace the suit before it is entirely worn out, by a new one. That is obsolescence or antiquation. In that case the scrap value may be somewhat higher.

In the matter of reasonable and adequate return on investment, we have always held that eight per cent is none too great under conditions like those of the Chicago Telephone Company, which must suffer both competition and regulation, and whose charter is of comparatively short life. The very investigations by which the campany has been repeatedly beset form good evidence of the instability of schedules and consequent uncertainty of appeal to investors. Where monopoly exists under a long-term or perpetual franchise, six per cent may be ample; but not otherwise. Even the fact that the company's stocks is quoted at a price which nets but six per cent is merely evidence of public confidence in the securities. The same thing is true of nearly all good securities which have regularly paid dividends for some time. It does not follow that returns on all securities shuld be reduced to a point which would establish their price at par. The premium on a public utility stock must be regarded as a further evidence of good management, protecting the original investor in a business so far not entirely stable, but not guaranteeing a perpetual continuance of the high rate of return.

In the brief time which could be given to a matter purely local and of circumscribed importance, we have not been able to find the solution of the telephone rate problem in the Bemis report. But as the discussion has only begun, and there will be much threshing out of theories and practices, the ultimate result may yield information of general value to rate makers.

MUNICIPAL REGULATION OF UTILITIES.

CHICAGO, the aggressive, is engaged in an effort to retain undisputed its control over its public utilities. The occasion is the movement to form a comprehensive public service commission in the state of Illinois.

There is no reason—theoretically, at least—why a city commission should not be as efficient in every way as a state commission—except for one thing. Few cities have enough public utility problems to occupy the whole time of an efficient commission. Chicago, indeed, exercises its power over its utilities without the assistance of any commission whatever. Its council committee on gas, oil and electric light is very energetic, and quite willing to undertake what regulating needs to be done, with the help of a hired expert now and then.

This system might be excellent if the committee, having engaged an expert, would abide by his findings. The usual practice, however, is to employ a second expert to check the first, and a third to finish the work after the reports of the first and second have been discarded. This naturally results in a choice collection of theoretical figures, no two authors of which agree on any one item.

A habit of this system is to set a bold and arbitrary figure, like seventy-cent gas for example, and use it as a political platform. The operating company is thus placed on the defensive and takes to the courts, which after all is the true American method of settling differences.

Chicago succeeded, in 1907, in regulating her telephone rates. She has tried twice since then and failed, and seems likely to fail the third time. She failed in her attempt to regulate gas rates, and is now in litigation on the subject.

There is no reason to doubt that any of the existing state commissions would have settled the telephone and gas cases with dispatch and finality. Some of them have already successfully terminated investigations just as complex. Few cities can point with pride to the accomplishment unassisted, of really great public utility readjustments.

Political interference is almost always stronger in municipal than in state undertakings. This is the natural result of the concentrated activities of city government, and cannot be altered short of the millenium. So far, there has been no definite charge of political influence brought against any of the state utility commissions.

Let the state regulate the utilities.

MEASURED RATES IN CITIES OVER 10,000.

SECOND in our series on "Rates in Cities of Over 10,000 Population" is the article on measured service in this issue. As explained in the introduction, the list of such cities enjoying measured service is very

much smaller than the previous list of cities with flat rate schedules. The great majority of operating companies in smaller cities adhere to the flat rate strictly.

Measured service, like any other metered supply, has a great many advantages and a few disadvantages to the consumer. It assures him a charge exactly proportionate to his use; it promotes better service by relieving the lines of the system of much unnecessary traffic, and it puts the company in the position of having to earn its pay for each call. On the other hand, it may tend slightly to discourage free use of the telephone—which may be either an advantage or a disadvantage, according as the user is impulsive or conservative by nature.

Each call being regarded individually, irrespective of the total number of calls, it might be supposed that under similar conditions of length of line, operating cost, etc., the rate per call might be the same in cities of ten thousand or a million population. This does not appear to be true, however. We find the average business call in New York costs the caller a little over five cents. In Chicago the figure is nearer three and one-half cents. In Philadelphia it goes up again to a little under four and one-half cents. In Roanoke, Va., everything is three cents even. The general tendency is, however, to allow five cents for the "guaranteed" calls, with excess calls averaging about three cents.

It may be pointed out that the greatest objections to measured service at present is the suspicion that the operating company may be registering calls not actually completed. Doubtless most users of such service have wondered, when calling a number which failed to answer, if the operator did not charge the call anyway. Disgruntled employees have sometimes even disseminated the statement that such is the practice—which readily finds credence among persons not fond of corporations. This is an impression which telephone companies must guard against until the subscribers' meter comes into common use.

The student of rates will doubtless find material for much comparative study in the thirty-four examples of measured service schedules we make public. In connection with the previous article on flat rates (November TELEPHONE ENGINEER) it proves a veritable encyclopedia of telephone rates in the United States.

A TELEPHONE MAN ON COURTESY

"Don't say 'Hello' when answering a call for a business house, and don't ask some one you have called to 'wait a minute' until your boss gets ready to talk," were two of the admonitions of Thomas J. Feeney, superintendent of advertising for the New England Telephone & Telegraph Company, Boston, Mass., in the course of a recent talk to the senior class of the high school of commerce.

Mr. Feeney was discussing "Telephone Courtesy as a Business Asset," and demonstrating its worth by a series of concrete suggestions. He showed how some retail grocers and provision dealers were cutting out the enormous cost of double trips to each customer by taking orders by telephone and by using their horses and wagons to make deliveries only. This plan required fewer wagons and enabled the dealers to have expert salesmen rather than mere wagon drivers. He said it was important, however, before calling a line of prospective customers by telephone, to secure their permission to do so, in order that the call might be welcomed as a convenience rather than rejected as an impertinence.

Instead of answering a call by saying "Hello," Mr. Feeney suggested that the person answering should give the name of the firm, as "Smith, Jones & Company," for example. This invites the caller to at once state his name, and thus get down to business without the usual circumlocution and consequent loss of time. He also advised the boys, when making calls for an employer, to have the employer ready to talk the moment the person called for answered. No form of telephoning gave rise to more just cause of irritation than the practice of having an office boy call a busy man and keep this man waiting at the other end of the wire awaiting the caller's deliberate convenience.

He also cautioned the boys, in answering the telephone for a business house, to answer promptly and courteously. Their position in this respect was quite as important as if they had charge of answering all the firm's letters, because they would be practically without supervision, as their manner of replying might reflect the personality of the firm, and would create upon the person calling a favorable or unfavorable impression, thus winning or losing trade.

TELEPHONE TO BE MINERS' LIFE SAVER

The latest development in the science of telephonic communication and a new experiment of the United States Bureau of Mines in its life-saving operations is a telephone by means of which conversation is transmitted from the outside of the throat instead of from the mouth.

The new telephone is regarded by experts as a most efficient solution of the problem of insuring verbal communication between the rescuer in the mine and the outside men, when a mouth-breathing apparatus is used.

The recently adopted mouth-breathing apparatus, which it is declared, will soon take the place of the oxygen helmet now used in rescue work, gives the operator no freedom of the lips.

The transmitter of the newly devised telephone comes in direct contact with the vocal organs.

WIRELESS AUTOMOBILE ATTACHMENT

Interesting and exhaustive experiments, involving for the first time the use of the automobile in wireless telephony, have recently been made by E. C. Hanson, of Los Angeles.

One of the most recent experiments was receipt on Lookout mountain of a message sent over the ranges from Long Beach, thirty-five miles away. The car used was an R-C-H 1913 type, current being supplied by the lighting storage battery, with which the car is equipped.

Strapped to front and back of the car were sectional poles supporting aerial wires and high voltage insulators tuned to definite wave. These were able to pick up waves propagated through space at rate of 186,000 miles per second from the sending station, these waves impinging on the aerial wires on the car, oscillated through the primary coils of the tuner to the earth connection, thus setting up surges of electric energy of varying amplitude, corresponding to the voice at the transmitting station. Vibrations in the secondary coil actu-

ated a very delicate crystal detector, which in turn charged a condenser and discharged through the delicate wireless telephone receivers, held to the car of the occupants of the car.

Every modulation and variation in tone from the transmitting station caused a similar synchronous current at the receiving station on the car, resulting in transmission of articulated speech and music through a space of more than thirty-five miles from sending station to car.

So excellent were the results obtained and so pleased was Mr. Hanson that on the return to Los Angeles he predicted that it would not be long before wireless telephones would be regular equipment on automobiles.

Paris to Have Police Telephone System

The police department in Paris had only one telephone until recently: The sale of decorations discovered in 1887, such as that of the Legion of Honor, caused this limiting of telephone usage in police circles. An instructing judge used the telephone and pretended to be a wine merchant to whom the decoration had been sold. In this way he elicited from the accused official the information needed to convict him. Those who succeeded him were so much afraid of the telephone as a possible aid to further complications that they decided to avoid it. Thus the police department in one of the world's largest cities has been hampered by lack of this necessity.

Holds Improvement Invention on Automatic

It is rumored plans and drawings for an invention that would be as great an improvement over the present automatic telephone as to be automatic is an improvement over the old system of telephoning, are now in the possession of Mrs. A. B. Strowger, of St. Petersburg, whose husband invented the automatic telephone. Mrs. Strowger has never made application for patent on the new telephone, and her husband died before he could make the application for the invention, which probably would have made him independently wealthy.

An American consul reports that a foreign telephone company, at a directors' meeting held recently, voted to install a new telephone system in its new modern station which is now being built. It was not decided whether the new system is to be similar to the present switchboard system, or to adopt the automatic, but bids will probably be asked for both. The consulate has applied for plans and specifications, and the company has promised to furnish these as soon as made out, when same will be loaned to interested firms by the Bureau of Foreign and Domestic Commerce. In the meantime, it will be well for firms desiring to compete to communicate with the company at once. Correspondence may be in English. Refer to No. 9906.

When you have a business deal with the man in the office next to yours and time is a factor, do you dictate numerous letters and wait until he answers them, or do you call him into your office, or go to his, and complete the transaction?

With the telephone of today, aided by efficient and courteous operators, the condition is the same whether the man be in the next office, a hundred, or even a thousand miles distant.

A Lot of Loaded Lines

The Christmas Telephone.

T'was the night before Christmas and the main office board
Was busy and buzzing with drops unrestored;
For people were ordering their presents by wire,
For them, no mad shopping their bodies to tire.
It just goes to show what the telephones do;
They save you the bother your fathers went through.

Please send up tonight by a very strong boy,
A wagon, a hose cart, a saw, not a toy—
For Bob—and be sure and be careful to see
That they come up tonight, or the dickens there'll be

To pay in the morning. My tree is complete
With everything pretty and good things to eat;
But I've put off the getting of these things I need;
And say, by the way, send a velocipede

To the boy just next door; for I guess I can spare
Some "good will toward men" from my own little share;
And he has no daddy, so why shouldn't I
Play Santa to him, when I've money to buy?

'Tis the night before Christmas; when Central cuts in
The tears trickle down from her eyelash to chin,
As she listens and listens with thoughts all her own
About the good heart of the old telephone. —A. L. H.

A booklet on the manufacture of ozone states that it is "formed by the action of the ultra-violent rays of sunlight on air." An industry of the Sahara, evidently.

YE ANCIENT AND HONORABLE BUSINESS.

[From the London *Electrician*.]

We regret to record the death of Lord Furness, which occurred on Sunday last. Christopher Furness was born on April 23, 1852, and at an early age entered the family business.

At Connellsville, Pa., a telephone operator has sued the telephone company for $10,000 because she bumped her nose on a voltmeter in the dark. Sticking her nose in the wire chief's business, it seems.

ZERO IN TESTIMONIALS.

[From *Ignition-Carburetion-Lubrication*.]

The original Kingston carbureter, named after its inventor, George Kingston, had one pre-eminent feature, its efficiency when properly adjusted, and the fact that even now there are still in daily use hundreds of this type of carbureting device, the manufacture of which ceased four years ago, speaks well for other advantageous features.

THE COUNTRY SCRIBE INDIGNANT.

[From the Middleport *Republican*.]

The Citizens' Telephone Company here have their lines in apple pie order. You can do more business and reach more people through here afoot than you can by phone in the same length of time. If it was not for the 'phones there would be more bald-headed men in Snowville than there is, for several of the good men's wives put in more time listening on the 'phone than they do at anything else. What is this world coming to, anyway?

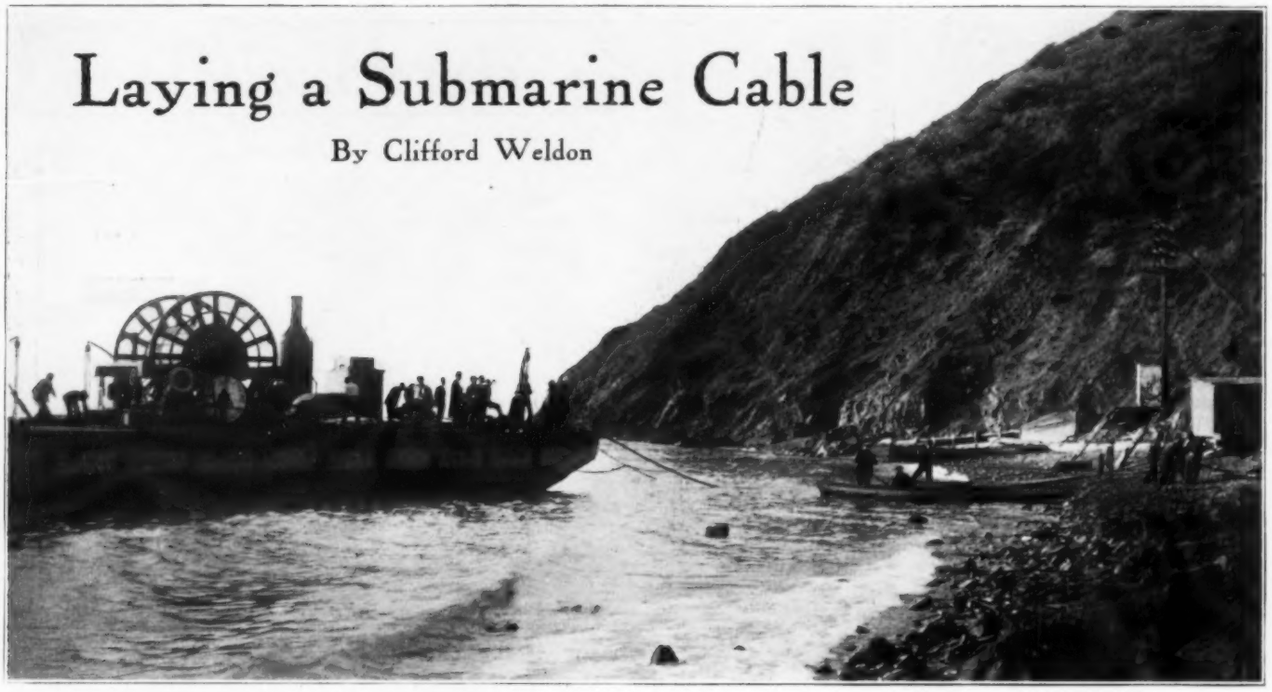
Here's a game: Write down all the names of soap makers or soup makers you can think of. Then cross out all those whose advertising you have seen within the last three months. Where does the non-advertiser get off?

Those who kick at long working hours are the ones who wonder how to kill time after working hours.

—P. H. W.

Laying a Submarine Cable

By Clifford Weldon



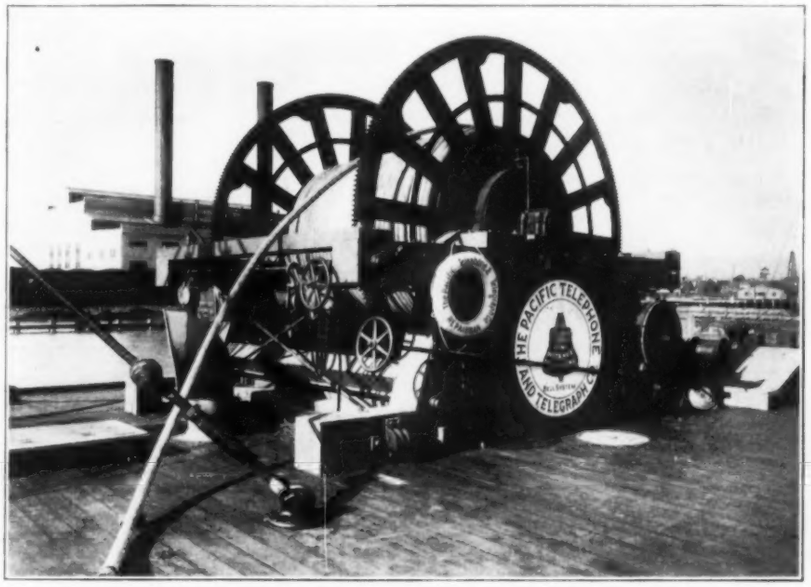
The Pacific Telephone and Telegraph Company's Barge "Repairman" Laying the New Submarine Cable at Goat Island.

THE recent laying of a new duplex San Francisco-Oakland submarine cable by the Pacific Telephone and Telegraph Company was a particular and carefully planned task. It was necessary to lay it in two sections, one connecting the Long Wharf of the Southern Pacific Company with the Yerba Buena Island, commonly known as Goat Island, and the other section extending the distance between Goat Island and the Ferry Building, San Francisco. The reason for the cable being laid in two sections was that it was imperative to land at Goat Island to connect into the cable the Pupin loading coils.

The Pacific Telephone and Telegraph Company's barge "Repairman," and crew was towed from its dock at the foot of Sixth avenue, Oakland, and run out to the end of Long Wharf, the terminal of the cable. The period of slack water was awaited, as it is at this time only that the cable can be laid; slack water being the time during the change in direction of the tidal currents.

It took all the knowledge and tact of a much experienced crew to make a perfect job of laying the submarine cable. Hauling the end ashore was the most interesting and most exciting part of the whole process. The men had to work quickly and accurately; the orders and directions of Captain Thomas were given tersely and briskly and the crew responded in a like manner. When landed, the end of the cable was firmly secured by heavy lines which bore the strain while the cable barge was getting under way.

A brave little tug steamed out first to take the course and was followed, slowly, by the reliable "Repairman," flanked by another tug, the duty of which was to steady the barge. To make the course as short as possible was the object in mind of the cable-layers, keeping the cable clear of those previously laid, lest it be necessary to pick it up at a later date in which case the other cables would suffer no damage.



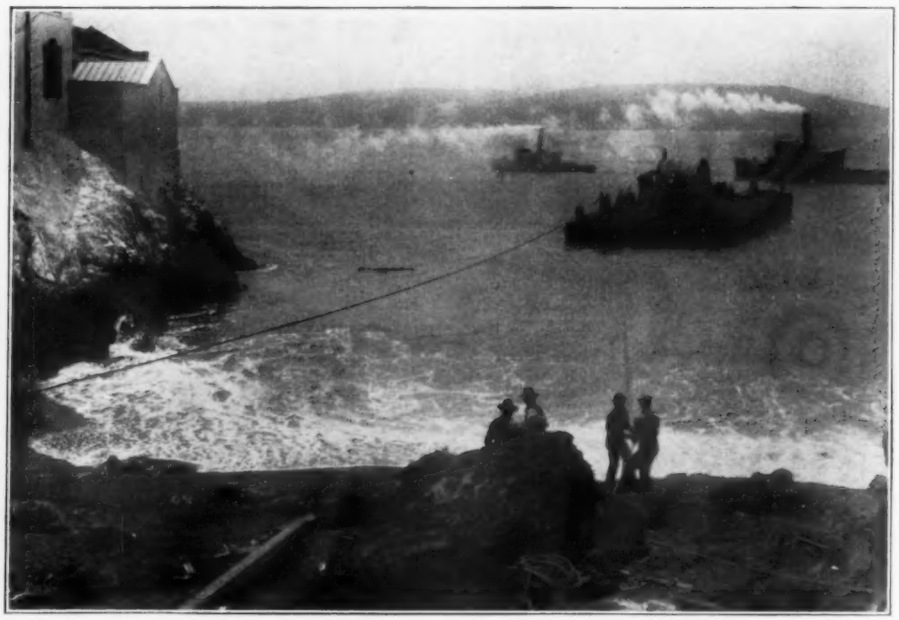
The Big Reel of Cable on the "Repairman."

Brakes held the cable in check while it was being paid out over the sheaf in the stern by gravity. At the same time, a test of the conductors was made in order to detect and forestall any trouble which might develop during the immersion of the cable. The shore end was constantly

communicated with, over the conductors of the cable, by telephone.

The two sections of the cable had been shipped in two approximately equal lengths and were spliced before being reeled on the large cable reel of the barge. Until it came time for the splice to pass over the sheave, the paying out of the cable was continued carefully and at a uniformly slow rate. Then, all friction was removed from the brakes, the splice passed over the sheave smoothly and quickly and slipped into the water with but very little bending.

When the "Repairman" arrived at a point off the landing at Goat Island, the barge was held in a stationary position by the tug, from which lines extended to the shore, where they were tightly secured in order to insure the steadiness of the barge. The lines which fastened the cable to the barge, took the strain of the cable on the reel, while the proper amount of slack to make the distance of the terminal house formed a reserve coil, in the form of a figure eight, on the deck.



It Took All the Knowledge and Tact of a Much Experienced Crew.

Then followed the process of hauling the cable ashore and placing it in the proper position on the beach. This was accomplished by means of fastening a rope to the end of the cable and running it through a block to the shore, the rope being drawn back to the engine.

The second section of the cable, after being spliced and wound on the reel, was subjected to insulation tests and those for grounds, crosses, shorts and capacity unbalance. Altogether, its process of laying was similar to that of the first section, and meant another credit mark to the years of cable laying superintended by Captain "Bill" Thomas.

Maryland Commission News

As a result of a joint petition by the Chesapeake & Potomac Telephone Company and the Protective Telephone Association of Maryland, an order was issued by the Maryland Public Service Commission authorizing the extension of all flat rates for a period of three months from October 1, and an additional period of three months is given the Protective Association in which to prepare its case, the date of presentation being postponed from January 1 to April 1. This postponement will allow both parties opportunity to gather further data on the effects of measured service on the entire business district. The Protective Association has also been definitely assured by the telephone company that in any change of rates or service occurring voluntarily, or by order of court or commission, the benefits of all such changes will be granted to all subscribers, regardless of their having signed yearly contracts on other terms.

The Maryland Public Service Commission has ruled that the Chesapeake & Potomac Telephone Company must adopt the word "Postal" as a call word for the Postal Telegraph and Cable Company and the words "Western Union" as a call word for the Western Union Telegraph Company. This action was taken as a result of a complaint filed by the Postal Company against the telephone Company, alleging that the use of the word "Telegram" as a call for the Western Union Company and the word "Postal" for the Postal Company had resulted in the diversion of Postal calls to its competitor by the telephone company, the parent company of which controls the Western Union Company. A similar case before the New York commission some months ago was likewise decided in favor of the Postal Company. The hearings in the case before the Maryland commission were marked by intense feeling between the representatives of the two companies.

A report recently submitted to the Maryland commission by Chief Engineer Charles E. Phelps is said to show that the saving to telephone subscribers of the Chesapeake & Potomac Telephone Company by reason of the new rate order by the commission is more than 20 per cent. The actual saving to subscribers is estimated to be $109,945 for the period from January 1 to October 1.

Illinois Commission News

Whether or not the rates of the Citizens Company in Rockford shall be raised will go to the Illinois Railroad Commission and the company and the citizens of Rockford have agreed to abide by the commission's decision. This was the result of a recent mass meeting in Rockford, attended by about 200 citizens and farmers, and at which C. E. Tarte, general manager for the Citizens Telephone Company, represented the company. It was decided that the present rates shall be effective until the decision of the commission is given. Rates now are $18 for business telephones and $15 for residence telephones. The advance was to have been $24 for business and $18 for residence. Farm rates in the vicinity of Rockford, which are $15 a year at a distance of five or six miles from the central office, will stand until January 1, 1918, and the fixing of this date does not necessarily mean that they will be advanced then.

Rates in Cities of Over 10,000 Population

2. Measured Service

IF TELEPHONE rates as a whole are complicated, measured service rates are the essence of intricacy when it comes to making a tabulation. This fact is largely due to the practice of operating companies in the larger cities of making a separate rate for each additional hundred or two of calls per annum.

It would be quite possible, as an aid to composition, to present merely the highest and lowest schedule in these cases, leaving it to the reader to work out the intermediate charges. Such a record, however, would be neither complete nor accurate, and for the sake of a slight gain in convenience would deprive the reader of definite information.

Last month's article on flat rates listed one hundred and twenty-seven cities. Of these fifty-one were shown with dual service, making a total listing of one hundred and seventy-eight rate schedules. The measured service list is very much smaller. Comparatively few of the smaller cities have any measured service whatever, while in many cases of dual service, one of the companies offers its subscribers the option of unlimited or measured service, while the other company adheres wholly to the flat rate system.

Because of the lack of standards of measured rate tabulation it has been found necessary to treat each city individually. The thirty-five cities considered, therefore, are studied in thirty-five paragraphs. This method, while it does not readily permit direct comparison between cities of similar size, affords more extended information to those who are sufficiently interested to make such comparisons. To aid in this work, the plan adopted in the first article of this series of grading the cities by population instead of listing them alphabetically or other arbitrary arrangement, is followed in this.

NEW YORK, N. Y.—Population, 4,766,883. Bell company. *Business,* single line, 600 calls, $60.00, to 4,500 calls, $204.00; two-party line, 800 calls, $69.00, to 2,100 calls, $123.00. *Residence,* single line, 600 calls, $54.00, to 2,400 calls, $129.00; two-party line, 600 calls, $45.00, to 1,200 calls, $72.00. Additional calls, 4 cts. 453,000 telephones.

CHICAGO, ILL.—Pop., 2,185,283. Bell company. *Business,* single line, 1,200 calls, $60.00. Add. calls, 3 cts. to 2,400; beyond 2,400, 2 cts. *Residence,* single line, 1,200 calls, $56.00. Add. calls, 3 cts. Nickel prepaid, single line, 20 cts. per day guarantee; two-party, 10 cts. per day guarantee; four-party, 5 cts. per day guarantee.

PHILADELPHIA, PA.—Pop., 1,549,008. Bell company. *Business,* single line, "Schedule A," 600 calls, $48.00, add. calls, 5 cts.; 800 calls, $57.00, add. calls, 5 cts.; 1,000 calls, $66.00, add. calls, 5 cts.; 1,200 calls, $75.00, add. calls, 5 cts.; 1,500 calls, $87.00, add. calls, 5 cts.; 1,800 calls, $99.00, add. calls, 5 cts.; 2,100 calls, $111.00, add. calls, 5 cts.; 2,400 calls, $120.00, add. calls, 4 cts.. Refund on unused calls. "Schedule B," 2,400 calls, $90.00, add. calls, 4 cts.; 2,700 calls, $99.00, add. calls, 3 cts.; 3,300 calls, $114.00, add. lines, 3 cts.; 3,900 calls, $129.00, add. calls, 3 cts.; 4,500 calls, $144.00, add. calls, 3 cts.. No refund on unused calls. "Schedule C," two direct lines, 4,800 calls, $162.00 upward in steps of 600 calls at $12. *Residence,* single line, 600 calls, $48.00; 800 calls, $57.00. Two-party line, 600 calls, $36.00; 800 calls, $42.00. Four-party line, 360 calls, $24.00; all add. calls 5 cts. Nickel prepay, single line, $30.00 plus 5 cts. for each local call. Two-party line, $18.00 plus 5 cts. for each local call. Four-party line, $12.00 plus 5 cts. for each local call.

ST. LOUIS, MO.—Pop., 687,029. Bell company. *Business,* single line, 1,800 calls, $72.00. Two-party line, 1,800 calls, $48.00; add. calls, 2 cts.

BOSTON, MASS.—Pop., 670,585. Bell company. *Business,* single line, 960 calls, $48.00; add. calls, 3 cts. Two-party line, 840 calls, $42.00; add. calls, 3 cts. *Residence,* single line, 840 calls, $42.00; add. calls, 3 cts. Two-party line, 720 calls, $36.00; add. calls, 3 cts.

BALTIMORE, MD.—Pop., 558,485. Bell company. *Business,* single line, "Schedule A," 600 calls, $39.00, to 1,200 calls, $66.00, by steps of 200 calls at $9.00; add. calls, 5 cts.; 1,500 calls, $78.00, add. calls, 5 cts.; 1,800 calls, $87.00, add. calls, 5 cts.; 2,100 calls, $96.00, to 3,300 calls, $132.00, in steps of 300 calls at $9.00; add. calls, 4 cts.; 3,600 calls, $138.00, to 5,400 calls, $174.00, in steps of 300 calls at $6.00; add. calls, 4 cts. Refund for unused calls. "Schedule B," 1,800 calls, $75.00, add. calls, 5 cts.; 2,400 calls, $87.00; add. calls, 4 cts.; 3,000 calls, $99.00, add. calls, 4 cts.; 3,600 calls, $111.00, add. calls, 4 cts.; 4,200 calls, $123.00, add. calls, 3 cts.; 4,800 calls, $135.00, add. calls, 3 cts.; 5,400 calls, $147.00, add. calls, 3 cts. No refund for unused calls. Two-party line, 360 calls, $24.00; add. calls, 5 cts. Nickel prepayment, single line, $12.00 plus 626-call guarantee. Two-party, $9.60 plus 365-call guarantee. *Residence,* two-party, 360 calls, $240.00; add. calls, 5 cts. Nickel prepayment, $8.40 plus 365-call guarantee.

BUFFALO, N. Y.—Pop., 423,715. Independent company. *Business,* single line, 1,600 calls, $48.

SAN FRANCISCO, CAL.—Pop., 416,912. Bell company. *Business,* single line, 960 calls, $60.00, add. calls, 5 cts.; 2,120 calls, $90.00, add. calls, 4 cts.; 3,000 calls, $110.00, add. calls, 3½ cts.; 4,680 calls, $150.00, add. calls, 3 cts.; 6,480 calls, $180.00, add. calls, 2½ cts.; 9,360 calls, $210.00, add. calls, 2 cts.; 13,200 calls, $235.00, add. calls, 1½ cts. Coin prepayment, single line, 720 calls, $66.00, add. calls, 5 cts.; 1,500 calls, $75.00, add. calls, 4 cts. Two-party line, 720 calls, $54.00, add. calls, 5 cts.; 1,200 calls, $60.00, add. calls, 5 cts. Four-party line, $12 plus 5 cts. per call; 600 calls, $30.00, add. calls, 5 cts. *Residence,* single line, 1,500 calls, $36.00, add. calls, 3 cts. Coin prepayment, two-party line, 700 calls, $27.00, add. calls, 5 cts. Four-party line, 365 calls, $18.00, add. calls, 5 cts.

CINCINNATI, OHIO.—Pop., 364,463. Bell company. *Business,* single line (2 miles from exchange, 600 calls, $48.00, (4 miles from exchange) $60.00; add. calls, 3 cts. Nickel prepay, single line, 1,200 calls, $60.00. Four-party line, 600 calls, $30.00; 10 per cent refund on extra calls. *Residence,* nickel prepay, four-party line, 365 calls, $18.00.

NEW ORLEANS, LA.—Pop., 339,075. Bell company. *Business,* single line, $36.00 plus 2 cts. per call; 1,000 calls, $60.00; add. calls, 2 cts. Nickel prepay, 900 calls, $45.00; refund, 50 per cent of add. calls. *Residence,* single line, 1,000 calls, $42.00; add. calls, 2 cts. Nickel prepay, two-party line, 600 calls, $30.00; refund, 50 per cent of add. calls.

WASHINGTON, D. C.—Pop., 331,069. Bell company. *Business,* single line, 600 calls, $39.00; 800 calls, $48.00; 1,000 calls, $57.00, add. calls, 5 cts.; 1,200 calls, $66.00, to 2,400 calls, $102.00, by steps of 200 calls, $6.00, add. calls, 4 cts.; 2,700 calls, $108.00 and upward by steps of 300 calls at $6.00, add. calls, 3 cts. Two-party line, 360 calls, $30.00, add. calls, 5 cts. *Residence,* single line, 600 calls, $39.00. Two-party line, 360 calls, $30.00. Four-party line, 600 calls, $36.00, add. calls, 5 cts.

LOS ANGELES, CAL.—Pop., 319,198. Bell and independent companies. *Business,* single line, 720 calls, $48.00, add. calls, 3 cts.; 1,200 calls $60.00, add. calls, 2 cts. Nickel prepay, 900 calls, $45.00; refund, 40 per cent add. calls. *Residence,* single line, 600 calls, $24.00; add. calls, 2 cts.

SEATTLE, WASH.—Pop., 237,194. Bell company. *Business,* single line, 1,200 calls, $60.00, add. calls, 3 cts.; 1,800 calls, $72.00, add. calls, 2½ cts.

PROVIDENCE, R. I.—Pop., 224,324. Bell company. *Business,* single line, 600 calls, $40.00; add. calls, 3 cts. Two-party line, 600 calls, $33.00; add. calls, 3 cts. Nickel prepay, 450 calls, $22.50. *Residence,* single line, 600 calls, $30.00; add. calls, 3 cts. Two-party line, 600 calls, $25.00; add. calls, 3 cts. Nickel prepay, 360 calls, $18.00.

ST. PAUL, MINN.—Pop., 214,744. Bell company. *Business,* nickel prepay, single line, 1,440 calls, $72.00.

PORTLAND, ORE.—Pop., 207,214. Bell company. *Business,* single line, 1,500 calls, $60.00; add. calls, 2 cts. Two-party line, 960 calls, $48.00; add. calls, 2½ cts. Nickel prepay, single line, 900 calls, $45.00. Two-party line, 600 calls, $30.00; refund 50 per

cent add. calls. *Residence*, nickel prepay, single line, 540 calls, $27.00; refund 50 per cent add. calls.

New Haven, Conn.—Pop., 133,605. Bell company. *Business*, single line, 800 calls, $36.00, add. calls, 4 cts.; 1,200 calls, $48.00, add. calls, 4 cts.; 1,500 calls, $54.00, add. calls, 4 cts.; 1,800 calls, $60.00, add. calls, 3½ cts.; 2,100 calls, $66.00, add. calls, 3½ cts.; 2,400 calls, $72.00, add. calls, 3 cts. *Residence*, two-party line, 400 calls, $25.00; add. calls, 4 cts.

Omaha, Neb.—Pop., 124,096. Bell company. *Business*, single line, 800 calls, $54.00, add. calls, 3 cts.; 1,200 calls, $66.00, add. calls, 3 cts. Two-party line, 600 calls, $45.00, add. calls, 3 cts.

Trenton, N. J.—Pop., 96,815. Bell company. *Business*, single line, 600 calls, $30.00, add. calls, 4 cts.; 800 calls, $36.00, add. calls, 4 cts.; 1,000 calls, $42.00, add. calls, 4 cts; 1,200 calls, $48.00, add. calls, 4 cts.

Springfield, Mass.—Pop., 88,926. Bell company. *Business*, single line, 780 calls, $39.00; add. calls, 3 cts. *Residence*, single line, 780 calls, $39.00; add. calls, 3 cts.

Wilmington, Del.—Pop., 87,411. Bell company. *Business*, single line, 600 calls, $36.00; 800 calls, $42.00; 1,000 calls, $48.00; 1,200 calls, $54.00; add. calls, 4 cts., or 100 add. calls, $3.00.

Lawrence, Mass.—Pop., 85,892. Bell company. *Business*, single line, 720 calls, $36.00. Four-party nickel-prepay line, 548 calls, $27.38.

Yonkers, N. Y.—Pop., 79,803. Bell company. *Business*, single line, 600 calls, $36.00; add. calls, 5 cts.

Holyoke, Mass.—Pop., 57,730. Bell company. *Business*, single line, 825 calls, $33.00; add. calls, 5 cts.

Malden, Mass.—Pop., 44,404. Bell company. *Business*, single line, 840 calls (8 mi. radius), $42.00; add. calls, 3 cts. Nickel prepay, 1,200 calls, $60.00. Two-party line, 660 calls (8 mi. radius), $33.00; add. calls, 3 cts. Four-party, nickel prepay line, 600 calls, $30.00. *Residence*, single line, 840 calls (8 mi. radius), $42.00; add. calls, 3 cts. Two-party line, 480 calls (8 mi. radius), $24.00; add. calls, 3 cts. Four-party, nickel prepay line, 420 calls, $21.00.

Elmira, N. Y.—Pop., 37,176. Bell company. *Business*, single line, 800 calls, $30.00; add. calls, 3 cts.

Roanoke, Va.—Pop., 34,874. Independent company. *Business*, single line, 1,200 calls, $36.00; add. calls, 3 cts. Two-party line, 1,000 calls, $30.00; add. calls, 3 cts. *Residence*, single line, 800 calls, $24.00; add. calls, 3 cts.

East Orange, N. J.—Pop., 34,371. Bell company. *Business*, single line, 600 calls, $42.00; 1,000 calls, $60.00.

Portsmouth, Va.—Pop., 33,190. Bell company. *Business*, single line, 1,200 calls (including Norfolk, Va.), $42.00; add. calls, 3 cts.

Mt. Vernon, N. Y.—Pop., 30,919. Bell company. *Business*, single line, 600 calls, $36.00; 800 calls, $42.00; 1,200 calls, $54.00; 1,500 calls, $60.00; add. calls, 3 cts.

Colorado Springs, Colo.—Pop., 29,078. Bell company. *Residence*, eight-party, nickel prepay line, 360 calls, $78.00.

New Rochelle, N. Y.—Pop., 28,867. Bell company. *Business*, single line, 600 calls, $36.00, add. calls, 5 cts.; 800 calls, $42.00, add. calls, 4 cts.; 1,000 calls, $48.00, add. calls, 4 cts.; 1,200 calls, $54.00, add. calls, 4 cts.; 1,500 calls, $60.00, add. calls, 3 cts. Two-party line, 600 calls, $30.00, add. calls, 5 cts.; 800 calls, $36.00, add. calls, 4 cts.; 1,000 calls, $42.00, add. calls, 4 cts.; 1,200 calls, $54.00, add. calls, 4 cts.

Ogden City, Utah.—Pop., 25,580. Bell company. *Business*, single line, 500 calls, $50.00; 600 calls, $56.00; 700 calls, $61.00. Two-party line, 500 calls, $4.00; 600 calls, $46.00; 700 calls, $51.00. Three-party line, 500 calls, $33.00; 600 calls, $39.00; 700 calls, $44.00; all add. calls, 5 cts. Four-party line, 600 calls, $30.00; add. calls, 2½ cents. *Residence*, same as business, except: Four-party line, 240 calls, $12.00, add. calls, 2½ cts., to 80 calls. Further add. calls free. Eight-party line, 240 calls, $12.00; add. calls, 1¼ cts.

Butte, Helena, Great Falls, Mont., and Boise, Idaho.—Same as Ogden City.

Wakefield, Mass.—Pop., 11,404. Bell company. *Business*, single line, 780 calls (8 mi. radius), $39.00; add. calls, 3 cts. Nickel prepay, 1,200 calls, $60.00. Two-party line, 600 calls (8 mi. radius), $30.00; add. calls, 3 cts. Four-party, nickel prepay line, 600 calls $30.00. *Residence*, single line, 780 calls (8 mi. radius), $39.00; add. calls, 3 cts. Two-party line, 480 calls (8 mi. radius), $24.00; add. calls, 3 cts. Four-party, nickel prepay line, 420 calls, $21.00.

Italy is to have interurban telephony. Various Tuscan communes are to be connected, the contract having already been signed for the construction of telephone lines.

Wisconsin Commission News

The Wisconsin Railroad Commission has ordered a physical connection to be made between the exchanges of the Clinton Telephone Company and the Bergen Telephone Company, with a tentative arrangement for compensation. It appears that the two utilities had exchanged free service up to April, when, on account of the inability of the companies to make a further agreement for exchange of service, the lines were disconnected. The Clinton Telephone Company objected to a free exchange of service on the ground that it has about six times as many subscribers as the Bergen company and that in exchanging free service it would be giving more than it received. From a test made upon the systems before the disconnection it appeared that the number of calls each way was about the same, so that as far as the amount of business was concerned the exchange would be of no more benefit to one than to the other. Even if the number of calls each way had not been the same, the service would not necessarily be of more value to one exchange than to the other, in the commission's opinion, inasmuch as the service has a value to the party called as well as to the party calling. The commission did, however, lay down the principle that if it cost one company more than it did the other to furnish the interchange of service it would not be reasonable to require the interchange on equal terms, but that rates should be charged which were based upon the cost of such service. In the present case there were no facts available to indicate that the cost would be greater to one company than to the other, nor was there any way to determine to what the cost to each would amount. To determine an equitable toll rate it will be necessary to make a study of the actual operating conditions with toll rates in force. The commission, therefore, ordered a physical connection to be made, with a tentative toll charge of two cents per completed call, and with total toll revenues divided equally between the two exchanges. The order was issued with the understanding that if experience shall show that the toll rates as fixed, or the division of revenue, needs revision, the matter may be reopened.

Big Daily Increase in New York Telephones

Two hundred telephones are added every day to the New York Telephone Company's system "in and around" this city, says the New York *Evening World*. Every year, therefore, it gains 60,000 new subscribers. Population shows an average yearly increase of 133,000. The increase in telephone patrons is nearly half this figure, although the comparison cannot be exact, since it includes suburbs as well as city. As fast as families can afford it nowadays, they have a telephone installed. The increase keeps pace with savings bank accounts, and helps keep down the latter. The nation-wide use of the telephone more than doubled between 1902 and 1907, in the latter year reaching 11,000,000,000 messages. In this state in the year 1907 the per capita average of messages was 128. The American people will pay in telephone tolls far in excess of $200,000,000 this year. It is hard to grasp these immense totals. Let it suffice that the telephone, the scientific toy of a generation ago, has elongated the legs and projected the voice of men, making the world a whispering gallery, realizing the myths of the Seven-League Boots and the Magic Carpet and enabling the reader to hold in a single day a greater number of significant conversations than fell to the lot of Methuselah in his nine centuries.

Cupid on a Long Distance Wire

By Emma Helman

"HELLO!"

The voice came so sweetly clear, so silver-toned, that Billie—notwithstanding his reputation for volubility—was thrilled into an awkward silence.

"Hello!" repeated the voice, a trifle impatiently.

"O—beg pardon—er—who is this, please?"

"Why, it's Vi; is this you, Robert?"

Robert!—Vi!—Vi, oh, to be sure: a nickname for his baby cousin, Violet, with whom he had played twenty years ago. But, Robert, who the deuce was this Robert?

"No, I'm not Robert, I'm your cousin Billie." Billie could imagine the shock of this abrupt statement, supposing Vi had never heard of her cousin Billie.

"Why—why I—didn't know I had a—Cousin Billie," the answer came slowly.

"You didn't! well, that's just where your education has been shamefully neglected, my dear cousin Vi."

A soft, rippling laugh floated over the line.

"My ignorance is truly deplorable, but—er—Cousin Billie," there was a note of swift, startled daring in the use of the appellation of close kinship, "how in the world did you find me?"

"Why, I met a fellow on the train between here and Albany—can't recall his name just now—fine fellow though—said he was a friend of the family—gave me your address here at the Holland House. I assure you, I wasted no time, after arriving, to call you up. And now, I'm coming right to the point, my dear cousin—I decided, years ago, that this estrangement between our families is all unconscionable foolishness. The motto that hangs on my wall is, 'Forget It!' So I've been trying to find you this long time—want to establish a sort of domestic Hague conference, you know. I might have called, at once, at your hotel, but it occurred to me that there's no medium like the telephone for settling family quarrels—no interruptions by flying missiles, etc.," here, one of Billie's free, infectious laughs bounded gayly over the line, and a little answering ripple, tripped lightly back to him.

"I believe the telephone does bear that enviable reputation, but—really, I didn't know we had any family differences,—Cousin Billie." That adorable little hesitancy before the "Cousin Billie," went to Billie's head. "Who would have thought that small five-year-old, tow-headed tom-boy would have developed such a voice?" he mused.

"They have kept you blissfully deluded, haven't they, little one?" Billie said, patronizingly. "Well, I'll tell you all about it when I see you. That reminds me; when and where may we meet? If there's any possibility of a dissenting vote from any member of the family in this peace conference, may be you had better come down to the main office in the hotel. I'll meet you there, and we'll dine out together, and in the meantime, we'll talk the matter over, and, incidentally, we'll renew our old love. When I saw you last, you were a charming little Miss of five summers; golden-haired—though, it's odd, isn't it, when you are speaking, I seem to feel a strand of silky, blue-black hair blowing across my face—but, anyway, I was in love with you then, and—I say, Cousin Vi, your voice has a most peculiar effect on me—I believe I'm in love with you still."

"Oh—er—I didn't catch that last—no, no, it isn't necessary to repeat it; please don't. I—I don't believe I could meet you—alone; Robert will be home tomorrow—and he will—"

"O, hang Robert!—I beg your pardon—my dear cousin—"

There was a long silence—a palpitating silence (the word suggested itself to Billie because of the unusual activity of his heart). For the first time, it occurred to him that it might be possible he had made too bold a play at the beginning, and he found himself quivering in the uncertainty of the result. His soul began to reach out, doubtfully—beseechingly, over the length of the electrified wire for a sound of the sweet, magnetic voice again, and the strength of his soul's desire effected a change in the girl's inclination to hang up the receiver—at least something did.

"A Mistake of Four Thousand Miles and a Girl, That's All!"

"Er — Cousin Billie," came timidly over the line.

Billie's heart jumped, exultantly.

"Yes, Cousin Vi," he managed to speak the words without revealing his excessive joy.

"Are you still there?" she asked, a little foolishly.

"Still here! Well, I should say yes!—clinging desperately to a hope, by a slender thread—I should say, wire—that my most gracious cousin won't turn me down, after I've come so far—remember I've been hunting for you for fifteen years."

"Where do you stay when you're not

—er—hunting, Cousin Billie?" There was a faint lilt of ridicule in the tone, but Billie declared stoutly, "I'm ever hunting!—but," he added, "our home is in Portland."

"My, that *is* a long way." Then, with a sudden change from the discreet, the girl added with a little, reckless gasp, "Of course, I couldn't be inhospitable—Cousin Billie, since you came so far."

The evident tinge of sarcasm in the last two words disturbed Billie, nevertheless he seized the moment as a favorable opportunity to force a surrender.

"How shall I know you, Cousin Vi? What will you wear?"

"Why—why," hesitated Vi, "I suppose I shall have on my coat-suit—I'm ready to go out, now, and I'll not return until about six o'clock. If—if I stop in the office to meet you without going up to our apartment, I'll have on this suit—it's a new gray one, with—"

"Are you sure it's new?" put in Billie, now jubilantly reckless.

"Yes, Impudence; and it's a French model, though I don't suppose that important fact will assist you in the least," came a little tartly from Vi.

"Don't think for a moment that I can't tell them — those curtailed, mono-limbed-pajama affairs, clap-board effect, straight up and down—oh, yes, I know them, my charming cousin." My, but this repartee with Cousin Vi was growing interesting. (With a pang, came the irrelevant reminder that he did not approve of cousins marrying.)

With lofty disdain, Vi ignored the first part of Billie's graphic description, but she retorted: "Why don't you supply the definition for clap-board, and add, 'made to cover a wooden structure'?"

"My dear Cousin Vi," gasped Billie, "you could not believe me capable of carrying the simile so far! Please pardon me for being a bungler at describing women's duds," he apologized.

"Well," with a relenting little laugh, "since you are so unsophisticated, I shall be obliged to simplify the matter of my identity. I shall have on a tailored hat of gray Japanese straw, trimmed in black, with a *very* long black quill—and I wear a rose—a pink rose, on the left lapel of my coat. To be entirely correct, it is worn a little lower on the lapel this year than last—had you noticed that, my cynical connoisseur of styles feminine?"

There was a click, and a buzzing, then another voice, clear, business-like, but entirely respectful, took the place of the little musical symphony that had so entranced Billie.

"Waiting!"

"O, hold on, please," objected Billie, desperately.

"I'm sorry," answered the respectful voice, "but we have a very urgent call for the line, may we cut you off?"

"Why," said Billie, "if it's something serious, but—"

"Thank you. You've been talking to New York City for fully ten minutes, you know," apologetically.

"New York City!" thundered Billie. He stood utterly dazed for a moment, then a terrifying thought struck him, and he fell over against the wall of the telephone booth, limp and perspiring. Could it be possible that in putting in the call for the "Holland House," by a slip of the tongue, he might have added aloud, "New York City?" He remembered the thought had come to him at the time, and his voice was subject to just such plagiaries of his thoughts.

"Great Scott! If I've been talking to New York City," here the perspiration congealed into a cold, dry paste over a bloodless surface, "I've made an appointment to meet 'Vi' who ever she is—bless her sweet heart—at the 'Holland House' in New York City, instead of my Cousin 'Violet' at the 'Holland House' here in Medford, Oregon. If this isn't the limit, I would like to know what is!"

"Why, Yes," He Said, "I believe She Is Just This Moment Passing Through the Room."

A little later, Billie was talking with "Central" again.

"Do you mean to tell me that I was really talking to New York City when you cut me off?"

"Yes, at the Holland House. You gave me no name, asking me to simply connect you with a certain apartment in the hotel, you remember. Why, was there a mistake?"

"A mistake of about four thousand miles, and a girl, that's all. I've simply made an appointment to dine with an unknown lady in New York City this evening, while I thought I was talking with a cousin of mine here at the Holland House in Medford."

A machine would have laughed—and so did "Central," but Billie could join in only half-heartedly, with his thoughts racing from one to the other of "Violet" in the Holland House in Medford, Oregon, and "Vi" in the Holland House in New York City. Snatches of his conversation with Vi in New York City came back to him, and he could not help but smile over the odd coincidence of names on the two coasts. "The Holland House"—"Albany"—Portland"—he could still account for the sarcasm in Vi's words, "so far." Then, of a sudden, every other thought was swallowed up in the one agonizing regret—his inability to keep the appointment with the charming, soft-voiced girl in New York City.

"What the deuce is a fellow to do?" he wailed, aloud.

"Couldn't you telephone the lady in New York City

again, and explain the mistake?" came "Central's" soothing voice.

"Well, what a mutt! I hadn't thought of that. But," he added, doubtfully, "I don't know her name—and she'll not be in the hotel until the hour of the appointment. We were to meet in the main office—"

"The clerk in the office might be able to—" began "Central," but Billie broke in with, "By George! There's nothing simpler. I'm very much obliged to you, Central. I'll see you later," and Billie struck out, with a return of his habitual good cheer, for the Holland House in Medford, Oregon, where his long-cherished hopes for domestic peace were speedily carried into effect—aided by the presence of the "fine fellow" Billie had met on the train. (Billie was urged to be at the wedding, but Billie had other plans.)

At exactly six o'clock (six o'clock in New York City), of the same day, a clerk in the "Holland House" of that place turned from the telephone and sent a quick, searching glance over the occupants of the main office, then, turning back, "Why, yes," he said, "I believe she is just this moment passing through the room. Gray suit—gray hat, with long black feather—yes—yes—pink rose on coat—yes. Dark hair and eyes, very striking, beautiful, I should call her—why, that's Miss Viola—"

The voluble office clerk was suddenly silenced by Billie at the other end of the line. Billie was never particularly troubled with intense conscientious scruples of any sort, but there seemed to be an unfairness about this disclosure of Viola's personal charms, and her name, while she was trusting him blindly and anonymously, that even Billie could not stand for.

"Hello!" again, came tripping across the stretch of four thousand miles, that sweetly clear, softly silver-toned voice.

"My beautiful, adorable affinity," throbbed Billie's fluttering heart; but he managed to speak more rationally.

"My dear cous—Miss Vi, you can't begin to know how glad I am to get you again. It was my beastly luck to be called—er—suddenly away, after talking with you this morning—which makes it impossible for me to meet you today. Disappointed! Great Scott! I cannot express to you the extent of my disappointment."

"How cheerfully you can exaggerate, Cous—Mr. Billie,—but I'm wretched about it, myself." There was a tremor in Vi's voice, and Billie could have shouted with joy because of his interpretation of its import. Could he have seen her dancing eyes, he never would have uttered the next few words with such profound earnestness.

"Listen! It will take me just six nights and six days to make the trip. Will you meet me at this same place, at this same hour, just six nights and six days from now? Will you?—will you, dear?"

Caressed by the sound-waves of a voice so irresistible, what could mere girl do, but lisp "perhaps," then quickly pull together her scattered reserve with an abrupt, "Robert is home. He came unexpectedly, while I was talking with you this morning."

"Robert!" almost shouted Billie. The objectionable Robert had dropped entirely from his mind, the latter being so entirely filled with one purpose, one concentrated aim.

"Why, yes, Brother Robert—you remember I told you I wan't looking for him until tomorrow. He wanted to meet you today—very, very much."

"Sorry the meeting is deferred," said Billie a little dubiously. "I shall be very glad to see 'Brother Robert' at the tryst—" Billie hesitated a moment, then continued, soberly, "My dear cous—Miss Vi, I have a—well—a rather delicate explanation to make at that time, and it would perhaps be a most favorable arrangement, for all concerned, if 'Brother Robert' were present." Billie failed to recognize his own voice in its new earnestness.

"My dear—cous—Billie," (what new, tantalizing cadence was this in Vi's tone?) "don't you think that perhaps it would be—er—safer to use 'long distance'?"

"Why, what do you mean?" gasped Billie.

"I mean that Brother Robert is in an awful temper now, and no telling what sort of a rage he will be in six nights and six days from now. He is so irredeemably prosy that he calls this delightful long-distance episode a disgraceful flirtation!"

"Long-distance! How did you know—how did he know—?" stammered Billie.

"Why, he is always interested in my movements (he's such a dear old goose about me). I told him I had been answering a call from Oregon. I thought, perhaps, the—er—safe and romantic distance might appeal to him as it had to me, but he uses long-distance so much in business affairs that the enchantment was all lost on him. I couldn't resist the temptation of telling him that it was 'Cousin Billie' I was conversing with, just to witness his delirium—of course he knew from the first, as well as you and I, that we have no Cousin Billie."

"Good Lord!" groaned Billie.

"Please don't swear, Mr.——"

Billie meekly filled out the broken sentence.

"Ferrel, Miss——"

"Ware," completed Viola, humbly.

They both laughed a very little.

"Don't you think we had better 'ring off,' now?" suggested Viola, after a vibrant silence.

"We'll have to, if I catch my train."

"You are coming, then?" in tones of amazement.

"Coming! Just as fast as the first trans-continental limited can take me! Good-bye—dear."

"Good-bye——"

"—do you want me to miss my train?—do you?"

"—dear." It was little more than a whisper, but it spanned the four thousand miles, and, incidentally, it brought Billie precipitately to a state of rapturous joy.

Dissolution of Western Telephone and Telegraph

The Western Telephone and Telegraph Company has been formally dissolved under the decree of the court and the property of the company has been sold to the American Telephone and Telegraph Company, which assumed all the obligations. The American Company was substituted a party of the first part under the indenture dated January 25, 1902, securing the collateral trust 5 per cent. gold bonds of the Western Company. The Old Colony Trust Company, trustee under said indenture, is now prepared to receive such bonds for the purpose of having printed upon them the agreement of the American Company to pay the principal and interest thereof, and the agreement of the holder to accept said agreement of the American Company in lieu of that of the Western Company. The Western formerly owned the Cleveland Telephone Company, which is now owned by the American Telephone and Telegraph Company.

Plan for Bell Employees' Pensions and Insurance

A fund of $10,000,000 for pensions, sick benefits and life insurance will be available on January first, for the 175,000 employees of the Bell system and associated interests, and their families and dependents, amounting altogether to more than a quarter of a million people.

This $10,000,000 fund will be made good from year to year by annual appropriations on the part of the American Telephone and Telegraph Company and associated companies, and the Western Union Telegraph Company and the Western Electric Company.

The plan for the distribution of this fund has been characterized as the most liberal, comprehensive and ideal ever inaugurated. President T. N. Vail has provided combined benefits for superannuation, sickness, accident and death, for an industrial army more than twice as large as the standing army of the United States.

This provision is made entirely at the expense of the various companies interested, without contributions of any kind from the employees themselves. The application of these varied benefits will be strictly democratic and will be for the benefit of all employees of every rank. The plan will provide for free change of employment from one company to another, with full credit for combined terms of service.

The Bell system and associated interests provide employment for about 175,000 people; of this number 130,000 are employees of the Bell Telephone System. The total yearly pay for the whole group is about $115,000,000, something over $80,000,000 being paid out in wages by the Bell telephone system alone.

The terms by which provision is made for the needs of age, illness, accidents and death, may be summarized as follows:

Pensions: Male employees who have reached the age of sixty years and who have been twenty years or more in service, may retire on pensions. They may be retired at the option of the company when they have reached the age of fifty-five years and have been twenty-five years or more in service. The pension age of female employees is in each case five years younger than that of male employees. Any employee who has been thirty years in service, regardless of age, may be pensioned on the approval of the president of the company.

The amount of the pension is automatically based on the years of service and the amount of pay, and will be one per cent of the average annual pay for ten years, multiplied by the number of years of service. Therefore, a man who had been thirty years in service would get 30 per cent of the average salary which he had been receiving during his last ten years of service. No pension will be less than $20.00 a month.

Accident Disability Benefits: In the case of accidents occurring in and due to the performance of work for the company, the employee will receive for total disability, full pay for thirteen weeks and half pay for the remainder of disability, up to six years.

If the disability is temporary, he will receive full pay for thirteen weeks and half pay until able to earn a livelihood, not exceeding six years.

Sickness Disability Benefits: Employees who are disabled by sickness or accident outside of the regular course of duty after ten years or more in service, will receive full pay for thirteen weeks and half pay for thirty-nine weeks; if from five to ten years in service, full pay for thirteen weeks and half pay for thirteen weeks; if from two to five years in service, full pay for four weeks and half pay for nine weeks. In the case of employees who have not been two years in service, heads of departments will be permitted the same discretion as heretofore, in continuing pay during temporary illness.

Life Insurance: In the case of death resulting from accident in and due to performance of work for the company, an insurance amounting to three years' pay will be paid to the dependents of the employee, the maximum payment being $5,000.

In the case of death resulting from sickness or from accident outside the business, the payment will be one year's pay for employees who have been ten years or more in service, and one-half of one year's pay for employees who have been from five to ten years in service, the maximum payment being $2,000.

If any state statutes provide for more liberal compensation than is provided under the benefit plan, the statutory provision will prevail. Where the employees have legal rights, as in some accident cases, they will have the option of exercising such rights or accepting the company's benefits.

The American Telephone and Telegraph Company has set aside from its surplus a fund which provides for those whom it directly employs, and also provides a reserve, upon which, under certain conditions, the associated companies may draw. This fund is supplemented by funds set aside by each company. The total appropriations will aggregate something more than $10,000,000. The benefits, it is estimated, will cost annually about $1,000,000 more than the present payments on this account.

The administration of the funds will be in the hands of employees' benefit committees of five, to be appointed by the board of directors of each company. The committee of each associated company will have jurisdiction over the benefits for employees of that company.

The employees' benefit committee of the American Telephone and Telegraph Company will have general jurisdiction over the plan for the entire system and specific authority as to the American Telephone and Telegraph Company's employees' benefits.

Telephone Cable Broken By Steamer

The Southern Bell Telephone Company's cable crossing the Cooper river to Mount Pleasant was broken recently while the steamship Evelyn, of the Philadelphia and Gulf Steamship Line, was turning around in the stream with her anchor dragging.

The cable was broken in two and for more than twenty-four hours there was no telephone communication between Charleston, S. C., and Mount Pleasant. Capt. Hecker, master of the Evelyn, stated that the accident was unavoidable, as there were no signs marking the location of the cable. He said that usually cables laid within harbors are marked with large signs at either end, which are noticeable at a great distance, and that this insures protection by warning the mariner in time how to handle his vessel.

The cable of the telephone line to Mount Pleasant crosses the Cooper river at the Consolidated Ferry. When the steamer Evelyn entered port from Philadelphia she went up stream, in order to turn. She was turning at a point opposite the pier head of the Consolidated wharf when her anchor, which was dragging, became entangled in the cable and pulled it up.

What One Woman Thinks

By Sarah Elizabeth Brown

I AM going to quit. This is to by last batch of copy for TELEPHONE ENGINEER. You, who read this announcement are glad, while I, who write it, am sad. Harking back to my first appearance in print, February, 1910, seems very short to me—doubtless a long time to you. I have kept the seventy big pages of my work in a scrap book. It is the only consistent effort at writing that can be charged against me. If you have been even partially concerned, you will understand why I must drop the work. My time is too greatly in demand. I have more important things to do.

* * *

But my scrap book will afford me a lot of pleasure. I have rung in people who have contributed their part in establishing a telephone property for Obediah and me that will keep the wolf from our door for years and years to come. My faith in the future of the telephone business is well founded. I have had my dividends with such frequency and regularity that there is reason for the faith. Properly managed, there is no more satisfactory pursuit for mankind. Why, in handling the election returns, there was joy at all ends of the lines, except at the homes of the postmaster and his deputy. Even these had no complaint when it came right down to our part of the service. A telephone company can't insure election results. Neither will the postmaster or his deputy discontinue as our customers.

* * *

I hope you were satisfied with the result of the election. I was tremendously pleased at Woodrow Wilson's next morning remark that nothing would be done by his administration to interfere with legitimate business. Wilson was among the first to discover that we have 5,000,000 voters in this country who control. They haven't a bit of sentiment. They don't care a continental rap for party. They wipe out the whole works and go on about their personal affairs. The democrats have the offices. The republicans move out. The democratic country newspapers—those who will get the county printing for two years, made a lot of fuss about their victory but the fellows who won were the 5,000,000 voters. They will win every time if party politics gets too gay. Personally, I will never care to vote. The country seems to be perfectly safe in the hands of the men.

* * *

The pension scheme of the American T. & T. Company, which is shared by the Western Union Telegraph and Western Electric Companies, comes in for a splendid assortment of kind words. An appropriation of $10,000,000 always gets respectful consideration, but it is rare that so vast a sum is set aside for such commendable purpose. As I understand it this big fund is to be perpetuated. At the end of the year 1913, no matter how much has been taken out to meet requirements, the deficit is to be made up to the original amount. No tax of any sort is made upon the beneficiaries. There is no high-brow provisions. The rank of employee is not considered. If the employee qualifies, he is on a par with all the others. Any employee who meets with accident while engaged in the pursuit of his labor, shares in the disability benefits. After ten years' service, he shares in sick benefits. The life insurance feature is most liberal. In case of death resulting from accident, the dependents of the employee receive the equivalent of three years' salary—the maximum payment being $5,000. There are other pleasant provisions, but none more so than the pension for those who have grown old in the service. If you have been employed for twenty years, starting at forty years, you may retire. The amount of your allotment is automatically based upon the years of your service and the amount of your pay. Take one per cent. of the average annual wage for ten years and multiply the amount by the total number of years you have served. It is so much better than a kick into the street, giving way to a younger man. I can only see the happiness that will follow such an arrangement. When you recall that these large companies employ 175,000 people and meet a payroll amounting to $115,000,000 per year you will the better appreciate how far-reaching is the scope of the enterprise.

* * *

Prof. Edward W. Bemis has finally submitted his report on the investigation of the Chicago Telephone Company to the committee on Gas, Oil and Electric Light. The telephone press has access to more statistics concerning the big Chicago operator. The professor recommends a $700,000 reduction. He wants the telephone subscribers to pay approximately $2.00 per station less annual rental. That would buy a plum pudding for Thanksgiving! This man Bemis started his investigation a year ago in July. He succeeded the Jacksons, Billy Crumb, Doc Wilder, the Jacksons again—they've had two whacks at it—and W. J. Hagenah. All of these experts have been fussing around the Chicago Telephone Company since 1906. For six years the work has progressed. In the meantime Chicago has more than doubled the subscriber list! For the life of me, I can't tell what it's all about. Maybe that is why I am going to quit. I'll apply my thinking where it will do some good. An old woman's thoughts never get very far outside of a sick room. That's where she shines. The telephone business is too healthy to need her.

* * *

After all, there isn't a great amount of excitement attending the telephone business nowadays. In my small way, I've tried to make a mountain or two out of a mole hill or two and nobody helped. It is about as quiet as the average church fair. I've actually seen more excitement around the grab-bag end of our bazaar. There isn't a lot that is new. A telephone is pretty much a telephone and a switchboard a switchboard. To be true, there are kinds and styles, but like automobiles, you get your money's worth every time—all depending on how much you want to pay. It will be a good long while before we have another exciting independent telephone convention. Everything is settling down for a long run—an endurance race. There is none of the old slapstick business. People know what they want and when they want it and they get it. Every telephone company, no matter what the brand, is growing. Every telephone company goes right along ordering goods. They get better stuff to-day than they used to get and pay less for it. The operating company gets more for its serv-

ice. The long-distance business grows proportionately and it has always been and will ever be a great source for profit. I am not going to leave myself to come back. I can, but I won't.

* * *

I prefer to turn out nice rolls of yellow butter at 40 cents per pound and grow chrysanthemums at two bits per bloom. It gets me farther. This thing of puttering with the telephone business as an innocent bystander, or as a lay member, has brought me occasional little thrills, but it has been more of a test on Obediah's patience than I had anticipated. When the head of the house looks over the tops of his glasses and says: "Lib, you're an old fool," after he has read my monthly grind, even though I can tell by the twinkle in his eye that he doesn't mean it, it hurts a little, anyway. It isn't just the thing to say.

* * *

I have also been charged with carrying water on both shoulders. As a matter of fact, I never took sides in my life. I have tried to stand for the right thing as I saw the right. I know that very few telephone men ever saw the inside of a jail. They are a decent lot. They do too little fighting. A fight is good for some things and it used to be good for the telephone business, always at the expense of the telephone. I don't believe in conflict, however. I believe in everybody getting all they can and canning all they get—or nearly all. In dropping out of my little lime-lighted niche there is a pang of regret in parting with some of the friends I've made. I have no apology to make for the bruises I've left among the thin-skinned.

* * *

My ardent wish is that the business will grow and grow and grow, and that all concerned in it will prosper and enjoy their work in the future as I have enjoyed my work in this free-lance, rambling capacity in the past.

* * *

Please accept my best wish that your Christmas will be joyful.

Thomas A. Watson's Reminiscences

Thomas A. Watson's humorous talk at the second annual convention of the Telephone Pioneers of America, in New York city, was interesting to the point of being worthy of special notice. Mr. Watson was the associate of Dr. Alexander Graham Bell. Following is his own description of the troubles of Dr. Bell and himself in "the good old days:"

I was but twenty years old when I first met Dr. Bell, but my recollections of those days are still very vivid. Those lectures which Dr. Bell delivered in the summer of 1877 had a more important effect on the ultimate development of the telephone than any one supposes. They were the turning point in our fortunes.

There was a tremendous need for cash just then among the four of us who then composed the world's telephone business, Dr. Bell, Mr. Hibbard, Mr. Sanders, and myself. We had just had a bitter disappointment. The Western Union Telegraph Company had just refused to purchase all our telephone patents for $100,000! And Dr. Bell needed money more than ever in his life—he wanted to get married, and to get married very, very badly at that. Some of the ladies connected with the inventors wanted us to market, to manufacture and sell telephones to raise money. That was the crisis in telephone history. Had we done so, the splendid development along lines of unity would have been prevented. Fortunately we stuck to our policy of never selling telephone instruments outright, but only leasing them.

By good fortune, Dr. Bell was invited to deliver a lecture and demonstrate his telephone before a scientific society in Salem, Mass. We hired an Atlantic and Pacific telegraph wire to connect our laboratory in Boston with the lyceum in Salem, each end being equipped with one of the old box telephones. I had a cornet player, an organ, and my voice to illustrate from the Boston end what Dr. Bell had to say at the hall end. The organ came out pretty strong, though sixteen miles away, but the great feature was the short sentences I ejaculated, usually such things as "How do you do," which I uttered in stentorian tones and which usually came out at the other end as "Hoo, hoo, hoo." And then my songs! I couldn't sing, but I simply had to, because they couldn't get any one with a voice as loud as mine. I sang "Yankee Doodle," "Pull for the Shore"—it was in the Moody and Sankey times—"Hold the Fort," and for sentiment, "Do Not Trust Him, Gentle Lady."

After the lectures distinguished citizens were allowed to talk to "Mr. Watson" at the other end of the line. I never knew till then how diffident prominent citizens could be. One prominent attorney, I remember, gasped and said "Rig agig gig and away we go." That was about all he could think of.

Two thousand people came to Providence to hear the telephone talk. Doesn't that seem funny today? On the request list for three lectures in Boston I remember were the names of Oliver Wendell Holmes and of Longfellow. The lectures excited tremendous interest all over the country, and best of all brought in enough money to tide us over.

For his first lecture in New York Dr. Bell was anxious to transmit his illustrations from Boston, so we hired a telegraph wire. Our laboratory was on the top floor of a boarding house, not an expensive one, and we had disturbed the boarders considerably by our shouting, and were not on good terms with our landlady. There was another reason, too. I knew I would have to do the shouting of my life from Boston to New York, so I made a tent of five blankets and crawled under it with my telephone instrument, and for two mortal hours I perspired and shouted. But my landlady didn't hear me fortunately.

Telephone Brings Help in Bank Robbery

One telephone, unassisted by human hands, sounded an alarm that drove burglars from the First National Bank of Medaryville, Wis., after they had dynamited their way through a steel wall that stood between them and $60,000. The men gave one lingering look at the mass of wealth that was exposed to their sight by the explosion and then took to their heels.

After investigating the vicinity of the bank and finding no night watchman, the safeblowers placed three charges of the high explosive, ignoring the innocent looking telephone that stood near. The first charge wrenched the steel door from the safe, and caused the receiver of the telephone to leap from its hook. The other two charges completed the demolition of the safe.

The first charge, however, had a much more far-reaching effect than the crooks thought. The displacing of the telephone receiver caused a light to twinkle on the switchboard in the telephone office, a half block distant. When the operator answered the call the detonation of the second blast boomed in her ears. Knowing that she was connected with a bank telephone she immediately sounded an alarm. The three crooks, knowing that they were discovered, each grasped a bag of gold and fled. They got $2,000. They left $60,000.

The municipal construction gang was handed public opinion in the way of a cartoon in a recent number of the Seattle (Washington) *Times*, which shows five men carrying a cross-arm, four men holding an uncoiled wire ready to jointly hand it up to the lineman when he gets his pipe puffing satisfactorily, while around and about them stand men engaged in the busy occupations of holding a spade or swapping ideas.

The World's Biggest Telephone Building

Chicago Company's New Home

HIGHER than twenty stories, plus fifty feet, floats the bell-symboled burgee of the Bell Telephone Company over Chicago's work-a-day world. Its prideful mission, from early morning until dusk, is to call attention to the company's new building—the largest exclusive home of the telephone in all the world.

It stands in majestic splendor towering over the brown-stone structure which, for years, has served the company well and faithfully. But the new building has much to boast; from its bronze entrance to the highest point of its parapet the note of harmony, in construction and decoration, is preserved. Eight elevators pursue their constant and vertical career softly, as on ropes of velvet; the company's library, private offices and many of the departments are beautifully green carpeted and mahogany furnished; the stairways are of white marble with solid bronze hand-railings and throughout the building are inverted lights, many and ornamental.

The New Building From the East. The Old Building is Just Beyond, on the Corner.

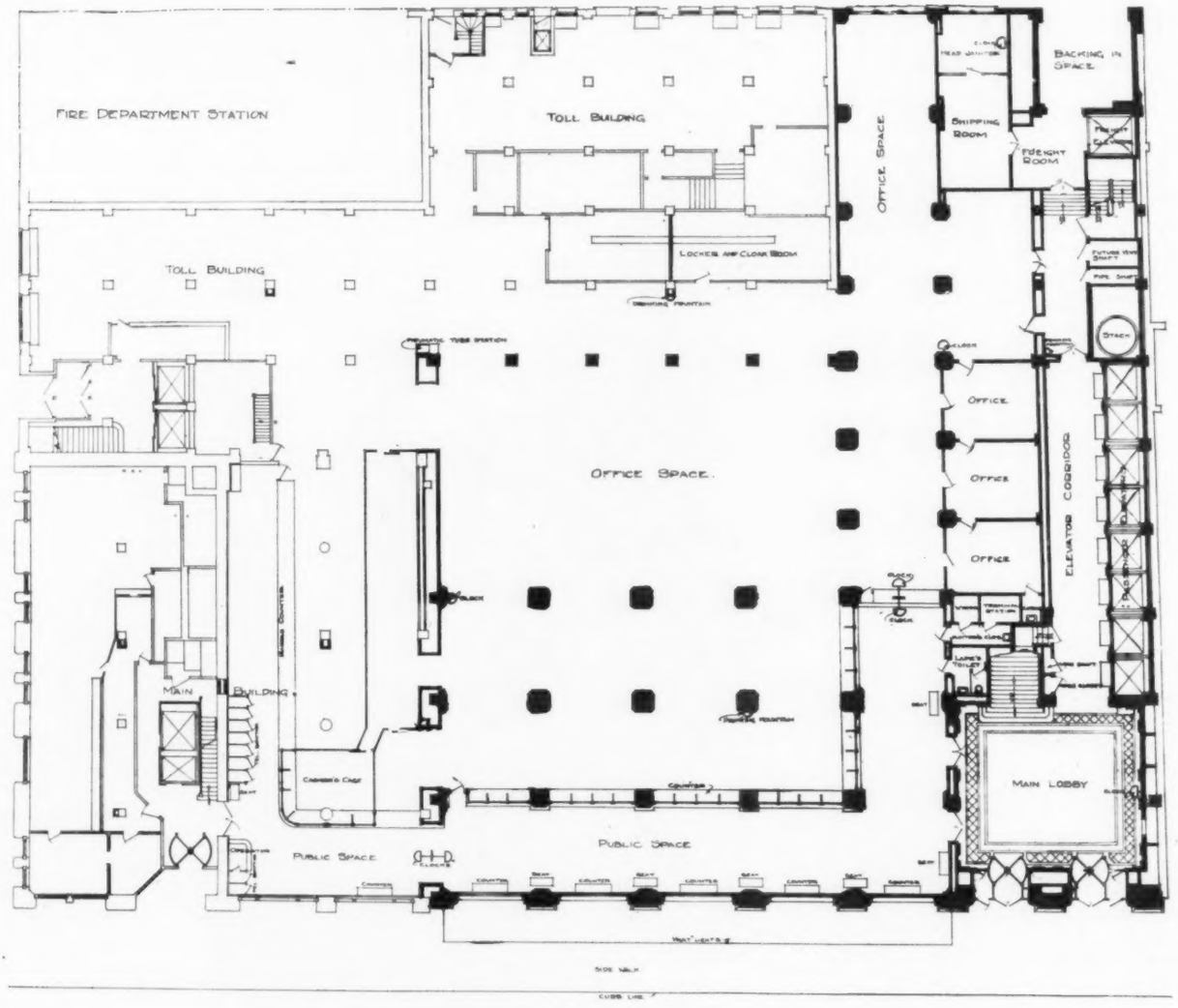
But the wonder of wonders is the lobby. It is entered through two revolving doors, which are operated by a small motor. The doors are surmounted by transoms covered by bronze grills, and above these are terra cotta tablets representing universal telephone service. Most beautiful of the whole structure is the ceiling of the lobby, divided by beams into small coffers each one of which is of actual gold-leaf with a deep blue center square from which peeps a bell-mouthed rosette. The walls are paneled in white Colorado yule marble, topped off with green, this fitting snugly into an artistic plaster cornice which joins walls and ceiling together.

At each elevator is an ornamental lamp of bronze, of one hundred and fifty watt size, and to match the lamps is a huge skeleton clock of the same material. The staircase is bronze and white and broad and gives the lobby its final note of grandeur. Over the whole is suspended a monster lamp in the shape of a bell which casts the light of sixty smaller lamps of forty watts each.

Adjoining the lobby is the contract department, with a window for each group of three exchanges and provided, under two-story high windows, with granite writing shelves. The Chicago city commercial department reigns supreme in the first floor offices. Just above it is the mezzanine or second floor, which occupies the rear half above the first floor, and is dedicated exclusively to the collectors, each of whom has sole ownership of a neat little mission desk and chair for keeping his books.

The Chicago plant department is in control of the third, fourth and fifth floors; here are the offices of the maintenance superintendent, the chief inspector and the construction superintendent, together with their assistants and clerical forces. On the fourth floor is a study-room for the operators-to-be, and it is on this floor that a connection between the old and new buildings has been made.

Until the company is ready to house its operators in the new structure or needs more office room, the sixth, seventh, eighth, ninth and tenth floors will be rented to outside concerns. The American Telephone and Telegraph Company occupies the eleventh floor, where the division commercial superintendent, the division plant superintendent and division traffic superintendent and forces are cared for.



FIRST FLOOR PLAN
The Divisions of Space on Floor One.

The twelfth floor is given over to the division auditor of receipts of the Chicago Telephone Company and to the accompanying clerical forces; the auditor of receipts and forces and additional forces of division auditor of receipts are on floor thirteen; and on fourteen are the forces and auditor of disbursements.

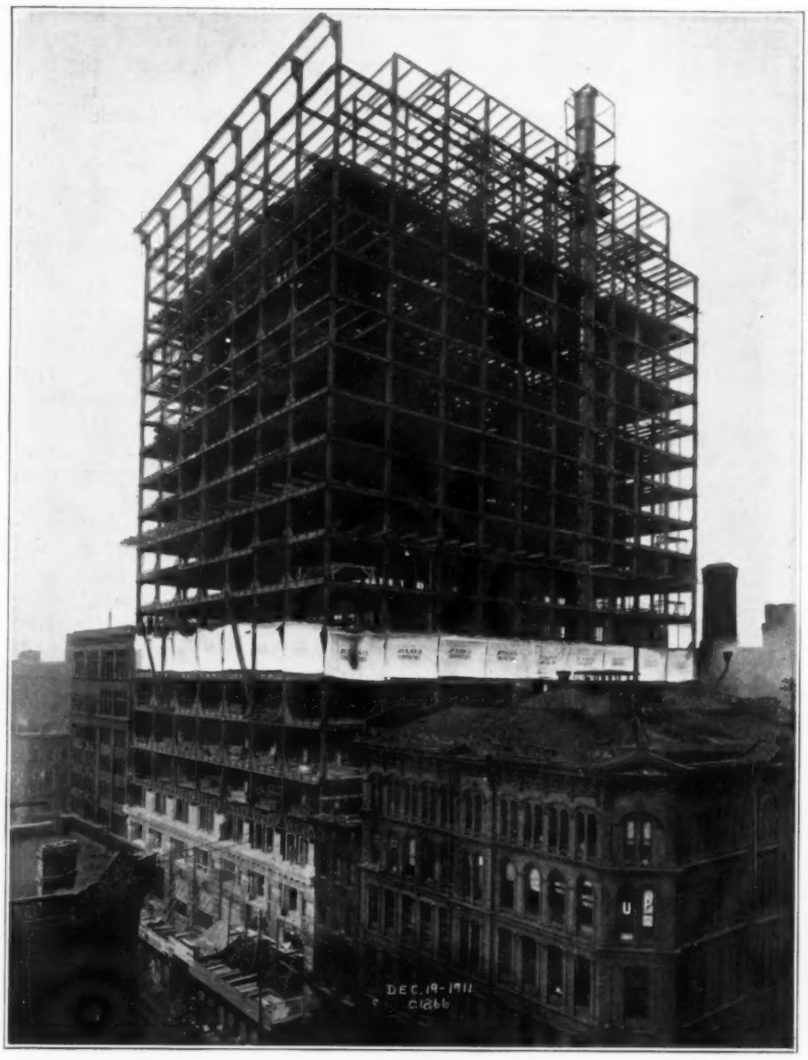
Floor fifteen serves the interests of the general auditor, general bookkeeper and chief traveling auditor and forces; floor sixteen is that of the general manager for Illinois, assistant general manager, general commercial superintendent, general plant superintendent and their respective forces, while the seventeenth story is that of the vice-president, manager of publicity department and clerical help.

President B. E. Sunny chose the eighteenth floor on which to establish his suite and here the secretary, treasurer, general counsel and assistants are also domiciled. The engineering department operates on the nineteenth floor, while the twentieth is occupied by the chief engineer, his assistants and force.

A trip to the twentieth floor, and the feature of the building remains to be seen. It is the roof, brick-tiled and wall-protected. From the roof a climb up a twelve-runged ladder to a two-foot ledge, up another ladder to the very top of the corniced structure—and the world is yours at a glance. To be more exact, the world looked out upon is that particular section which follows the shore of the lake from Waukegan to South Chicago, and the western section of the city, in the mazes of which orange-hued coaches, proclaiming North-Western ownership, steal from train-sheds and wind into the unseen distance. The new county building with its massive pillars and record for long time construction is beneath your notice, and to the right the white and boastful Insurance building contends for the honor of height.

Far below, the one-time sufficient brown stone telephone building snuggles close and watchful, ready to put in years of service for its new occupants, which will be the Chicago traffic department, the employment division, the claims department, suburban commercial department and additional forces of Chicago's plant department.

An approaching or departing glance at the "Telephone Building," as the new structure has been named, gives an inspiring glimpse of Mercury, messenger of



The Skeleton of the Big Building.

the gods, as he girds the eastern and western hemispheres with looped mands, symbolic of telephone lines.

In addition to being one of the most massive and decorative buildings in Chicago, the Telephone building also competes for honors in the way of ventilation, natural and artificial lighting and heating.

The Webster system is that used in heating. As it will operate under vacuum, it is especially adapted to the use of exhaust steam in heating.

The steam is carried to the roof in a twelve-inch riser, where mains are taken off and run around the outside walls of the building. At the radiator locations risers are connected into the main and are dropped to the third floor. These supply the radiators with steam on all of the floors from the twentieth down.

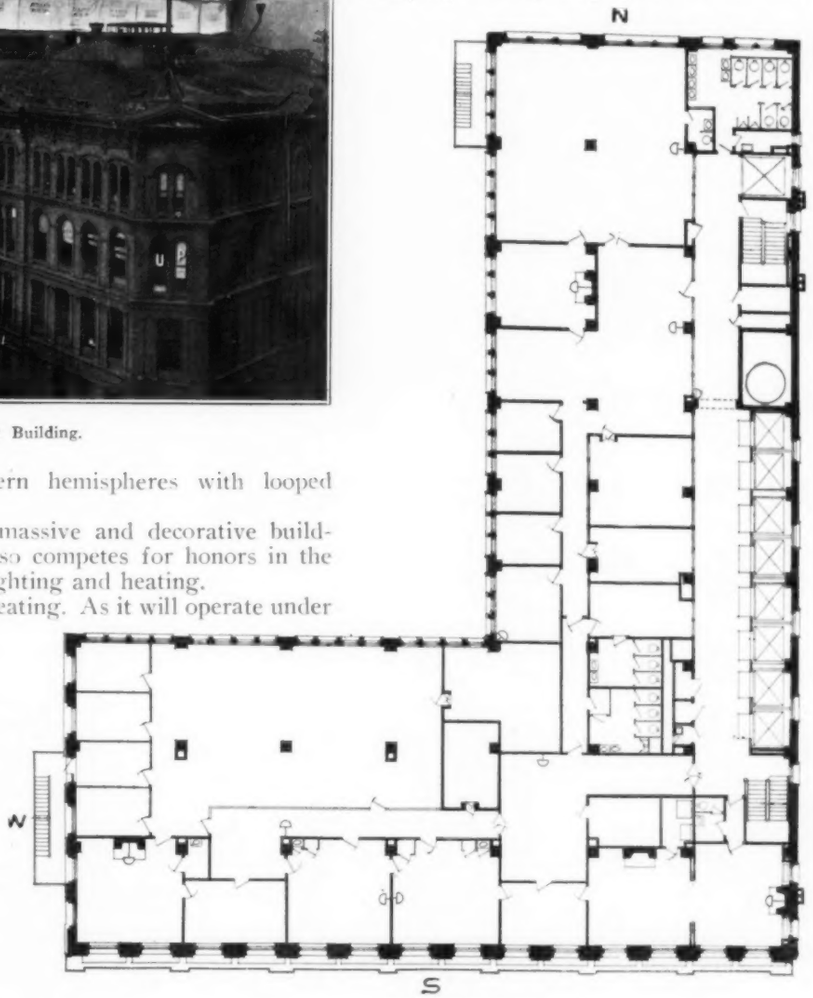
The lighting system is installed on the three-wire 115-230 volt plan; all wire being pulled in iron conduits concealed in ceilings, floor or wall.

On each floor adjoining the wire shaft has been constructed a closet in which is installed a metal cabinet containing the distribution panel for that floor. Each panel from the third to the twentieth story inclusive is fully equipped for the installation of sixteen meters. The first and second floor panels will take four meters each, while but one is planned for the basement.

Throughout the building there has been installed a pneumatic tube service for the purpose of transmitting correspondence and official papers between the many departments, which will materially expedite the dispatch of all papers.

'Tis a wondrous building, that of the five-stated group which has Chicago as its headquarters, and the other cities of the universe readily bow their acknowledgment of the fact.

An assembly hall will occupy the space which has been reserved for that purpose. This hall will be appropriately fitted up, in the very near future and will serve for a variety of events for the company's many employes. It will af-



18TH FLOOR PLAN
Floor Eighteen, Typical of the Upper Stories.

ford opportunities for the delivery of telephone lectures to the employees, by men who have distinguished themselves in the world of telephony and it will also be the medium for a furtherance of social acquaintanceship between the employes, the desired result being a cemented fellowship throughout the organization.

The Service Association

The Central States Telephone Service Association, newly organized in Chicago, has a big work mapped out for itself.

The object of the association is, "to promote harmony and co-operation between the various independent telephone companies in the central states, with a view of improving commercial, traffic and plant conditions, promoting standardization and uniformity of methods and perfecting service." It aims to put on its membership list every independent company in the central states, the companies thus to be strengthened by the support of an organization which will co-operate with district, state and national associations.

There have been three central committees named—plant, traffic and commercial, these to form the nucleus of the help-you organization and to be appealed to by any of the affiliated companies whenever advice or suggestive help is needed, for the prime object of these three committees is to give expert advice along the respective lines of operation which they represent. The advice is to be given gratis where the matter does not involve extensive and elaborate analysis and investigation. The every-day problems which confront every plant, whether large or small, will be taken care of by the committees named, on request of the members and without charge.

Chairman of the plant committee is B. G. Groh, chief engineer of the Illinois Telephone and Telegraph Company. The other members of this committee comprise Roland N. Barry, general superintendent of the Tri-State Telephone and Telegraph Company, St. Paul and Minneapolis, and H. B. Crandall, chief engineer of the Inter-State Independent Telephone and Telegraph Company, at Aurora. W. S. Vivian, secretary of the Michigan Independent Telephone and Traffic Association, Grand Rapids, Mich., is chairman of the traffic committee.

The personal of the commercial committee comprises, in addition to Chairman C. L. Fisher of Pontiac, L. C. Griffitts, general manager of the Inter-State, and E. E. Dacey, general manager of the Home Telephone Company at South Bend, Ind.

J. W. Callahan, general manager of the Illinois Telephone and Telegraph Company, at Chicago, was elected president of the organization and presided at the second meeting of the body, which was held November 11 at the Hotel La Salle, Chicago. An important feature of the meeting was the report of W. S. Vivian, chairman of the committee on operating rules. The proposed rules are greatly similar to those adopted by the Michigan association; they were accepted and ordered printed.

The attendance at this meeting of a great number of telephone owners and managers from a wide territory in the central states, spoke well for the popularity of the new organization and gave the membership list a promising outlook. That the association will develop into a movement of universal strength and helpfulness was predicted by Manford Savage, president of both the Home Telephone Company of Champaign, Ill., and of the National Independent Telephone Association. He made a valuable suggestion as to a quick method of building up the membership; it was to assemble the managers at the headquarters of the central companies and, at this face-to-face meeting, to explain the merits of the proposition to them. In this way, the interest of the small connecting lines, expressed by application for membership, would be assured.

Mr. Callahan briefly outlined the circumstances of the organizing of the new association and stated that at no time has there been thought that the association would conflict with any other telephone body, either state or national; that the aim of the Service association is to improve the service and increase the business of the companies affiliated and that, by a method of co-operation, difficulties will be solved and, by right treatment, eventually eliminated.

It was arranged that the new association be represented at the annual convention of the National association and also that a committee representative of the association confer with the directors of the National association at their meeting of December 9th, which will be the last held before the convention.

In addition to naming J. W. Callahan president, the association chose C. E. Tarte as vice-president; L. J. Wiley, Decatur, Ill., secretary and treasurer, and Frank L. Eldridge, resident assistant secretary at the Chicago terminal; he is special agent for the Illinois company and his office was deemed necessary owing to the large amount of organization work which will have to be carried on at Chicago.

Nebraska Commission News

A hearing was held by the Nebraska State Railway Commission on a protest from the people of York County against a raise in rates, the result of the recent telephone merger. The Lincoln company, which now owns the lines under the consolidation, contemplates a raise in the price of telephones, giving the users there a single service. It was agreed that the Railway Commission should make an investigation of the conditions, and in the meantime a raise will be made of 50 cents on resident telephones and $1 on business telephones. Prior to the merger a free service was given to all towns in the county by the York company. This will be continued until such time as a hearing can be had, after the commission has made the investigation.

South Carolina Commission News

Following several hearings the South Carolina Railroad Commission issued an order allowing the Southern Bell Telephone Company to increase its rates in Spartanburg 50 cents per month for each telephone. The order was granted on the condition that the company make certain improvements at a cost of $150,000 and that reasonable service is furnished. The new rate will go into effect within sixty days after the improvements have been made, which includes the installation of a common battery system. The majority opinion of the commission was signed by B. L. Caughman and G. McDuffie Hampton. John G. Richards wrote a dissenting opinion.

Reducing the Loss in Toll Earnings

By W. S. Vivian*

MANY of us have traveled along a country highway and in passing a farm, have noticed a mower lying out in the open exposed to the storm and weather, and over yonder we have seen a binder equally exposed; there in the barnyard was the wagon, left where they unhitched the last time. Usually, where these things are noticed, you found that the buildings, fences and general up-keep of the place were not what they ought to be, and the comment was, "No wonder that farmer is not prospering." Why? Because he is wasting his opportunities and his revenue by not taking care of his investment.

The chances are that farmer was thinking that if he had a farm somewhere else he would be more prosperous; or perhaps he thought he would be more successful if he were in some other business; or perhaps he didn't think at all.

Many in the telephone business to-day are a good deal like that farmer. They have been furnishing service below cost; they have been slack and careless in their collections; they have discriminated in the matter of rates; they have used slipshop methods in keeping their equipment and construction in repair; they have paid no attention to depreciation or providing for replacements; they have paid no attention whatever to the operating or traffic department.

Isn't it high time that we wake up and proceed to work along lines of improvement for every department? The telephone investors of this country are losing millions of dollars annually that they could just as well have, because you refuse to do your duty in full co-operating with your connecting companies.

It seems fair to say that we have advanced no further than we have in rendering an efficient service to the public because you and I and others have refused to do the things necessary to advance. The great wonder is that the advancement and development of the telephone business has been as great as it really has, surpassing by far the development of any other utility.

Our refusal to co-operate, however, has cost us immense sums of money and I now wish to submit to you a few figures for your consideration. The telephone report of the Department of Commerce and Labor for 1907 is supposed to be fairly reliable, as far as it goes, although we all recognize that it is not complete and that the real figures, if full statistics had been procured, would have been larger.

This record shows that the commercial systems of the Independent and Bell companies handle long distance and toll messages numbering 251,728,238. This was an increase over 1902, which was five years earlier, of 109.8 per cent.

We will not be far out of the way for 1912 if we estimate that there was another increase of 100 per cent, making the total number of messages 503,456,476. In an anaylsis of 68 exchanges which was made recently, the average message value was 20.6 cents, which would make the total toll revenue $103,712,034.

Traffic engineers are pretty much agreed that, of the messages offered, practically 15 per cent are not completed for various reasons. Therefore, this figure of $103,712,034 represents only 85 per cent of the business offered. If the entire business had been completed it would have amounted to $120,837,687, or $17,125,653 more than was actually received.

The same report of the Department of Commerce and Labor above referred to, shows that the independent systems handled 60,113,954 messages. The independent systems have easily doubled their traffic in the past five years and, therefore, they will during 1912, handle 120,227,908 messages at an average value of 20.6 cents each or $24,766,949, which figure represents 85 per cent of the business offered. If the entire amount offered had been completed, we would have had $29,137,705 or $4,370,756 more revenue than we will receive in 1912, on the above basis.

It is definitely stated that reports of many independent companies did not get into the department's hands, and, therefore, our actual business is really considerable more; and, the greater the actual business, the greater would be the above figures.

How are you going at it to save this great loss in revenue? In the first place, one of the necessary and absolutely essential things is that the independent telephone companies of this country agree to adopt a specified set of standard operating rules, and that they not only agree to adopt such rules, but that they actually put them into practical force and effect.

How can this be done? By mailing them to the managers of the several offices? Some good would possibly be derived from the more energetic managers from this source, but we would never have uniform operating methods. How then? By each company sending out a traffic instructor? No. While a great deal of good could be accomplished that way and a great improvement effected over present conditions, the objections are these: First, each traffic instructor would have his own ideas and his own interpretations; second, the smaller companies are so organized that they cannot, for a number of reasons, send out a traffic instructor. Thus the larger systems would have a fairly good operating staff whereas the smaller companies would remain practically as they now are and would receive little or no benefit.

How then should we go to work with our present complex organization?

Let us take Chicago as a basis. That city's commercial territory exists for at least 200 miles in every direction. The companies within that territory should agree to support an institution or organization which would have the means at its disposal to hire a thoroughly competent traffic man, who could proceed with an aggressive operating campaign throughout that territory. This would be done, among other ways, by urging the adoption of standard operating rules, which will be adapted to the use of the smaller offices as against the larger offices, and by having groups of operators gather at various centers where these rules can be explained to them in detail and illustrated properly, and where the operators who will do the work can become acquainted with each other. There are various other ways in which results could be accomplished.

The man at the head of an effective traffic depart-

*Abstract of an address given before the New Telephone Service Association, Chicago.

ment such as this will naturally, in a short time, establish a uniform method of handling every phase of the ticket from the time it is recorded until the messages are completed. He will look after matters of routing so as to provide channels for the passing of the traffic in such a manner as to avoid the congestion which now often occurs, and thus eliminate one great cause of loss at the present time.

He will recommend through, or switching, positions in offices where the traffic demands it, in getting through the messages which they switch, so that there may be as little delay of time as possible, thus getting away from the present condition, where the through office reports busy circuits and gets its own messages through regardless of any and all others.

He will notice the equipment and the facilities of each office as he has opportunity, giving especial attention to the efficiency of operators' telephone sets, cords, circuits, their systematic tests, etc., making manifold reports of his findings to the local manager, district manager, general manager, etc., as might be necessary.

There are these and many other ways in which such a man could be of great value, because he would ever have in mind, efficient long distance telephone service, and all of his suggestions and recommendations would be based upon that single idea.

So far this refers to the savings that can be effected by a uniform system. The revenue would greatly increase because of an added efficiency in the amount of work the operators can handle and in the increased number of messages that can be handled over the present circuits. The operators at the board would become far more skillful in the handling of their work. They would secure proper information from the subscriber or patron when they file the ticket, and thus avoid the condition which is so customary now of having to hold the circuit 50 or 100 miles to go back to the subscriber or patron, thus annoying him to get additional information. Such a department would gradually get down to a system in the work that would show the actual conditions.

This, however, can only be obtained by practical co-operation. You may ask what I mean by practical co-operation. If your co-operation only amounts to the talk we can get at our meetings, it is no good so far as accomplishing anything is concerned. But if, when the traffic man writes you for information, you immediately go to the trouble and expense of securing it for him and, when he comes to visit your office, you turn the office over to him, then you have a right to look for practical and beneficial results.

If, when the traffic man is in your office and he suggests that you render to him certain and sundry reports every week or month, or whatever the period of time may be and you promise to do it, then such reports should be on his desk at the time agreed upon. It should not be necessary for him to have to write you repeatedly, and finally get an excuse that you have been too busy to get out these reports. I want to emphasize the thought that that kind of co-operation which makes excuses is no good whatever. It becomes a liability and a source of expense and makes prevaricators out of otherwise well-meaning men.

The traffic man, when he accomplishes all that is here suggested, has not more than started on his work. At the present time a great majority of offices are equipped with clocks rather than with timing devices, such as the Calculagraph or the Monarch time stamp. Many of the clocks are altogether unreliable, many of them being little dollar alarm clocks or dollar watches. Either of these may be all right for the purpose for which they were intended, but they were not designed for the operating room.

If they are to be placed somewhere in an operating room and the operator must look from her board to wherever they may be hanging to record the time she receives a ticket from a patron, or the time the parties start to talk, or the time they get through, or the time she receives a ticket from some distant office, you may depend upon it that the time will not be accurate in most cases.

Imagine yourself an operator. The clock is some ten or fifteen feet away from you and you put up a connection where the parties start to talk. You find that the minute hand is somewhere around the Roman numeral which shows on the clock as VIII, which means twenty minutes to the hour; what time would you put on the ticket? The chances are you would put down 20 minutes to eight, when it might be 20½, 21, 21½, or even 22 minutes to eight, or it might be 19½ or 19, or 18½ minutes to eight, allowing an opportunity for several minutes variation from the exact time. This is just what the operators are doing many times each day.

By watching the overtime records from such offices we notice that the amount of overtime checked is usually very small. Taking the country as a whole, I believe you will find that the average office checks not to exceed five per cent in overtime. That is to say, if the toll business amounted to $100 a month, that not to exceed $5 of that would be received from overtime. What would you think then if I tell you of individual offices, where a campaign has been carried on for the past two or three years, that are checking as high as 25½ per cent? What would you think of a total of 68 exchanges where we have been agitating this question for one year now checking an average of 12.1 per cent?

Exchanges may easily average about 15 per cent in overtime if they have the right instruction and the right equipment. What would it do for you in your system if you could increase your toll revenue from 10 to 15 per cent by simply checking the accurate time?

Using as a basis the figures that I used before, namely, the estimated toll business for 1912, $24,766,949, reflect that if we could increase that by 10 per cent, we would immediately have nearly two and a half million dollars more money. Do you not think it would pay to go to the expense necessary to hold such schools and to provide such rules and to render an effective co-operation to whomsoever this work might be turned over?

I know of a company which has rendered steady active co-operation along this line for nearly three years; which has advertised the toll business by distribution of blotter, calendars, etc.; which has advertised the toll business by getting the operators together frequently; and which has advertised the business by furnishing a first class service. The result is that, in an agricultural community comprising in the neighborhood of 50 exchanges and 11,000 telephones, the average toll business per telephone for the year which recently closed was $5.54. Are you doing as well as that? Don't you really think that practical co-operation with your connecting companies, even though it may cost you a few dollars to bring it about, is one of the very best methods of assisting yourself and increasing your own revenue? Is that $7,000,000 and more which is now being lost each year worth saving?

The Telephone Scrap Book

Telephones in Submarine Signaling

A PAPER was read at the annual convention of the A. I. E. E. by H. J. W. Fay on the "History and Development of Submarine Signaling." The heavy bells used as transmitting apparatus are described in detail, as well as the mechanism by which they are sounded. At the present time about 900 ships are equipped with receiving apparatus for taking submarine signals from these bells, fifty-two of which operate in United States waters alone. The transmission of sound waves through water is much more positive and reliable than through air.

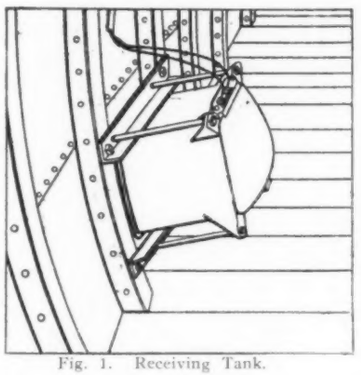


Fig. 1. Receiving Tank.

The receiving apparatus is made up as follows:

Two cast iron tanks are placed inside the ship against the skin, one on each bow. They are well below the water line and their distance from the stem varies from 20 to 150 feet, according to the size and shape of the ship. They are filled with salt water and in each a microphone is suspended. Each microphone is connected with the pilot house or chart room by an electric telephone system. The bell sound coming through the water passes through the skin of the ship, enters the water in the tank and is picked up by the microphone, which in turn transmits it to the pilot house. By means of an indicator box containing switches and arranged with two telephone receivers the observer can listen alternately to the sound picked up by the port and starboard microphones. In practice two sets of microphones are used on each ship, one called the "A" set and the other the "B" set, one set being duplicate to the other.

The captains generally use both of the receivers when making an observation. This enables them to listen with both ears instead of only one, and it also shuts out other noises which may be disturbing. Many users of the apparatus at first have had the impression that one receiver is for listening on the port side of the vessel and the other on the starboard side. This is not so. Both receivers reproduce the same sound.

Fig. 2. Telephone Apparatus.

The diagrams in Fig. 3 show how the direction of the bell may be determined on board ship by using the submarine signal receiving apparatus. Starting with ship heading north, with bell E. N. E. *a* shows the ship headed north when the first observation is made. With the semaphore switch set to starboard the bell sound is heard, but with the semaphore switch set to port no bell sound is heard, showing that the bell is located in the unshaded portion of the circle. (At distances less than one mile the sound may be heard faintly on the opposite side of the ship from the bell.) *b* shows the ship swung to starboard four points, heading northeast, and the louder bell sound still being heard on the starboard side; the shading is extended, leaving only the small, unshaded portion of the arc to be explored. A faint sound may now be heard on the port side. *c* shows the ship swung to starboard four points more, heading east, but in this position the louder bell sound is heard on the port side and the weaker bell sound on the starboard side, and the shading is again extended, showing that the ship has been swung past the bell, which now bears on the port bow. *d* shows the ship swung two points to port, heading on the bell, in which position the volume, quality and tone of the bell will be equal on both port and starboard sides, showing that the bell is located dead ahead.

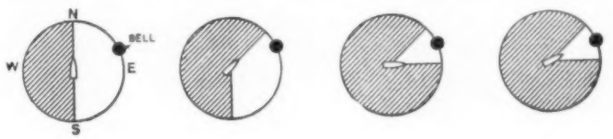


Fig. 3. Submarine Signal Direction Finding.

The function of the sending apparatus is to produce a sound which is easily distinguished, that of the receiving apparatus to tell the direction from which the sound comes.

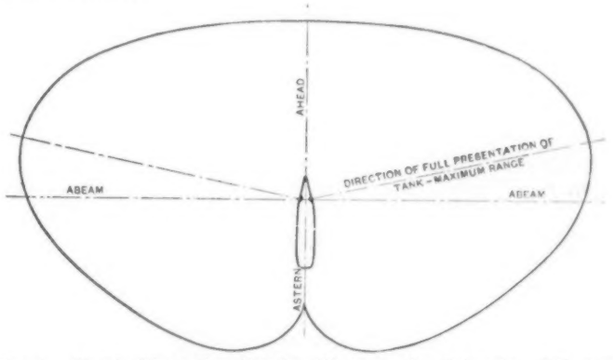


Fig. 4. Sketch Illustrating Relative Distances the Submarine Bell Can Be Heard at Different Angles.

In Fig. 3 are shown the manoeuvers which would be executed by a captain in locating a bell.

To obtain the best results with the submarine signal apparatus it is necessary to make a careful study of the boat and the conditions under which the apparatus is used. Each boat has its own peculiarities, and a knowledge of these is just as helpful in using submarine signal apparatus as in using the steering apparatus or in knowing how the vessel handles herself in a seaway.

When an observation for direction is made the receivers are taken from the hooks and the observer listens alternately on the port and starboard sides of the vessel by throwing the semaphore switch. A complete observa-

tion is made on the "A" set before changing to the "B" set, or *vice versa*, but the "set" switch is not thrown each time the semaphore switch is moved.

In using the apparatus the bell will be heard at a greater distance when the boat is running slow or stopped than when running fast; for then there is little or none of the water noise which is noticed when running at full speed.

Generally speaking, the deeper the draft, the better the results, for the surface water is not a good conductor of sound. Consequently with other conditions equal a boat loaded deep will get better results than when running light.

The results obtained in a calm sea will be better than those obtained in rough water. This is due to the pitching and rolling of the ship which make the water noises louder than in calm weather and cause the depth at which the receiving apparatus is submerged to vary greatly. This condition is unfavorable for the best results.

In testing to pick up the bell, the ship is swung to port or starboard. If the bell sound is louder when semaphore reads "Port" the bell is on the port side; if louder when the semaphore reads "Starboard" the bell is on the starboard side. To obtain the exact bearing the ship is swung towards the bell until the sound is equal on both sides. The bell will then be dead ahead.

Fig. 4 illustrates the following points: The bell can be heard at a greater distance when two or three points on either bow than when dead ahead.

It can be heard at the greatest distance when at right angles to the face of the tanks.

It can be heard a shorter distance when aft of the beam.

When dead astern it cannot be heard.

The reason for these results is as follows:

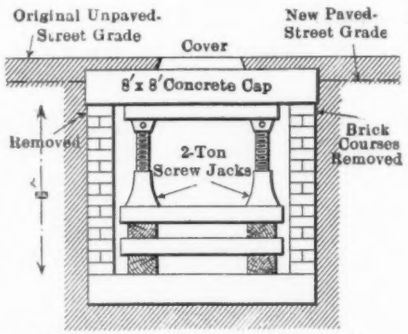
The bell sound can be heard best when that part of the ship on which the tanks are placed is most directly presented to the bell, namely, at right angles. It is apparent that when the bell is dead ahead the presentation of this portion is very slight, that it increases as the bell bears more nearly abeam and decreases as the bell passes aft of the beam.

When the bell is directly astern, that part of the ship's side on which the tanks are placed does not present itself to the bell and the path of the sound is broken up by the action of the propellers.

It will also be noted that the sound of the bell increases in volume and improves in quality of tone as it is approached, and that in passing it the sound will be loudest when the bell lies abeam and will decrease as the ship travels away.

Adapting Manhole to New Street Grade

IT OFTEN happens that after manholes have been installed to the existing grade level in an unpaved street the grade is changed or lowered when the street is paved, necessitating the adaptation of the manhole top to the new level. In some places the practice has been to wreck the old concrete cap, constructing a new one to conform to the new conditions. This expense and trouble was recently avoided, however, by Mr. Richard Krohn, foreman of the Milwaukee company's underground department, who employed a couple of powerful jacks to lift off the concrete cap so that a course or two of bricks could be removed, after which the cap was dropped back into place in its new position, according to the *Electrical World*, as shown in the sketch, the 8-foot by 8-foot by 7-inch concrete cap, weighing two tons, was handled by a pair of two-ton screw jacks blocked up to the proper height. The internal height of the manhole, 6 feet, left ample room after subtracting the width of two courses of bricks. A similar scheme might also be



Adapting Manhole to New Street Grade.

used to raise the cap to a higher grade. Three men, at 20 cents per hour, made the change in cover position in three hours. To have wrecked and rebuilt the concrete cover cap would have cost at least $30 for labor and material, besides requiring several days' time.

Modern Electrical Apparatus for the Deaf

A FRENCH electric apparatus which has been devised to intensify sounds and allow any deaf person to hear those sounds with the same clearness as with normal hearing is shown in Fig. 1. It was only after long years of study on the question that Mr. Laime, a French specialist in ear trouble, was able to make an apparatus of the highest degree of perfection. A similar device was independently invented in America by Herman G. Pape, whose apparatus is seen in Fig. 2, as it appears in use by a deaf person.

Fig. 1. French Apparatus.

The French apparatus noted in Fig. 1 was presented before the Congressional Congress of Paris and the International Congress of Brussels, 1910, and they were unanimous in recognizing its usefulness. Several improvements have been brought about in this French apparatus, consisting of a system of regulation which allows the sounds to be controlled to any degree of softness and also at any time, to take the intensity necessary to hear distant sounds. This is of the greatest importance for the perception of those of weak hearing. The sounds could not be made clear if the apparatus did not transmit with a regulated intensity, which must be more or less under certain conditions. Where this regulating feature does not

exist the devices run the risk of tiring the ear by an excessive and dangerous intensity, thereby increasing deafness instead of curing it.

The French apparatus of Dr. Laime is composed of three distinct parts, held together by fine and supple wires: the transmitter, receiver, and battery. The transmitter may be used in different ways, sometimes flat on the table, one part fastened above and resting on three small supports, while the receiver is

Fig. 2. American Apparatus in Use.

placed to the rear as an ordinary telephone receiver. Men are able to hide the receiver in their inner vest pocket and ladies in a small hand pocket or fold in the dress, so that the apparatus can be almost invisible. It is possible to hold the receiver while hearing by a small headband, this giving liberty to both hands.

It is in the French receiver that a fine system of regulation presents itself, a little hand being provided which can be made to move through five divisions. These divisions correspond to a number of different intensities. At mark 6, it shows the sign "quiet," and when the little hand is at this station the current is shut off. It is necessary to take care to conserve the current of the battery by putting back the hand to this place each time when one ceases to use the apparatus even for a short time.

The portable battery is readily carried in the pocket. It is well to have two batteries to use, so one can rest at times. The small French transmitter, 85 millimeters in diameter, is used in most cases; but to allow the deaf to hear with normal intensity an apparatus 115 millimeters diameter is utilized.

The American phonograph auristophone of the Pape type is a unique apparatus designed to overcome the surface scratching and metallic accompaniment of the ordinary phonograph. By its use the reproductions are free from all tubular roaring and there is a generous flow of true and perfect tone.

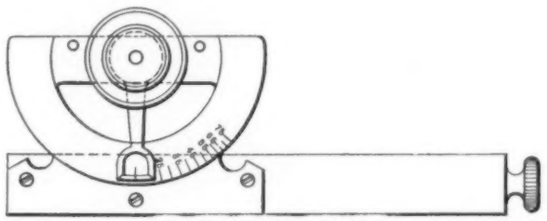
It is claimed that by the use of the American auristophone ear-piece, which fits over and not into the ear, a deaf person may receive an ear massage which is said to be of great value in the treatment of deafness and the annoying noises accompanying that condition. The American auristophone earpiece is provided with radial kerfs; thus the air is allowed to disperse freely and compression to the inner organs of hearing is relieved. This permits the sound to enter the ear without obstruction, stimulate and permanently recall to life any dormant organ of hearing.

The cap has a concave surface on the inside. This focuses the sound waves in a sharp manner through the central opening and prevents miniature echoes on the inside of the cap, which tend to give an indistinct production of sounds. The illustration, Fig. 2, shows the construction of the auristophone transmitter and ear-piece as utilized by the deaf. By means of this equipment those who have not heard for years, have been able to listen to concerts, speeches and sermons and enjoy conversation.

A Pole-Height Estimator

WHEN a tree, telephone line or other obstruction is to be crossed, the usual practice is to send an experienced line man to judge the height of pole needed, says the *Electrical World*. This man estimates the height of the object above the ground, adds what he thinks is the necessary amount of clearance and the distance which the butt is to be set into the ground, and turns in his report of the length of pole required. But when the pole is delivered to the site it is too often found that the estimator has allowed too much margin in order to be on the safe side, and that, say, a 35-foot pole has been ordered where a 30-foot stick would have served. Or—a more serious matter—the height may have been under estimated, so that the wires will not clear the obstruction. Another pole must then be hauled out and the first pole returned. Such errors on either side of the actual requirements mean waste of material, time and labor.

The line department of the Milwaukee Electric Railway & Light Company is making use of a pole-height



The Pole-Height Estimator.

estimator, a pocket device originated by S. B. Way and J. L. Fay, of the company, with which an ordinary line man can sight over the object to be crossed and read directly on a scale the pole required to give 5 feet clearance when set in the ground to the proper depth. The estimator is similar in optical principle to the mariner's device for reading star ascensions, although simplified and arranged with scale calibrated directly in pole heights.

To use the estimator, the line man measures with tape or by pacing a distance of 50 feet from the point beneath the tree or obstacle, and then, from this distance, sights through the estimator tube at the tree top or obstructing line. Turning a knurled thumb screw at the side rotates a level until its bubble, seen in a 45-degree mirror, appears alongside the center of the tube. After bubble and object have been sighted together in the tube, the pointer shows on the calibrated scale the exact height of the pole, including clearance and setting allowances. Twenty-five foot poles are provided to be set 4.5 feet in the ground, 45-foot poles 6 feet, and 75-foot poles 7.5 feet, with proportionate amounts for intermediate heights. The estimators as built for the Milwaukee company weigh only a few ounces and can be carried in the vest pocket.

Stenography By Telephone

SEVERAL months ago, says S. E. Lester in the *Telephone Review*, the writer was requested to call on the manager of Lord & Taylor, one of the large New York City dry-goods houses. In the interview the manager stated that he was dissatisfied with the results he was obtaining from his present method of conducting correspondence by the use of dictaphones, and had conceived the idea of displacing these instruments with the telephone.

The scheme and equipment now in operation are outlined as follows:

The subscriber has a private branch exchange system consisting of a 5-position switchboard, 45 trunk lines and 237 extension stations. Ten stenographers are employed in the conduct of the store's correspondence. These stenographers perform their duties in one large room. In this room a specially designed table has been installed which is provided with five typewriting positions on each side, the typewriting machines being placed about 8 inches below the surface of the table. A 10-inch panel extends down the center of the table and on this panel, immediately in front of each stenographer's position, an annunciating drop and a spring jack are installed. Each of the 10 typewriting positions is equipped with a breast transmitter and a head receiver terminating in a plug. The spring jack circuits connect to a 40-line standard sub-switchboard which is located at the head of the stenographers' table, and this switchboard is connected to the main house switch-board by 10 tie lin

Prior to the installation of this equipment, it was customary when any one associated with the store desired to dictate, to send, either by telephone or messenger, for a stenographer. As the stenographers were located in various parts of the store, considerable time was lost before one reached the point where the dictation was to be given. Of course, as much more was lost in returning to her desk to transcribe her notes. With the equipment now installed, when the services of a stenographer are desired, the party wishing to give dictation merely lifts his receiver and says "Stenographer, please." His extension station to the main house switchboard is immediately connected by a tie line to the sub-switchboard in the stenographers' room. The operator answering the sub-switchboard glances down the stenographers' table and connects to the stenographer who is least occupied, and who immediately plugs into the spring jack with her head receiver and breast transmitter. This equipment permits both hands to be free and the stenographer can either take the dictation in shorthand or write it direct on the machine, as the circumstances require.

The equipment in question has been in service for some time, and the manager of Lord & Taylor told the writer that the results obtained in efficiency and as a time-saver are far beyond all his expectations.

Ohio Commission News

Authority of the Ohio Public Service Commission for the sale of the Champaign Telephone Company to the United Telephone Company by exchange of stock was asked at Columbus. It is asserted that the separate operation of the two plants entails loss and that the Champaign Company is no longer able to provide adequate service. It is proposed to exchange $100 shares of the Champaign Company for $75 shares of the United. The Champaign has $15,000 of stock outstanding.

Ten Stenographers Wear Head Sets and Breast Transmitters.

Authority is asked by the Northwest Telephone Company of Defiance, Ohio, of the Ohio Public Service Commission to purchase the property of the Central Union (Bell) Telephone Company in Defiance for the sum of $17,050. The Northwest Company has 1,075 subscribers and the Bell 500. The Northwest Company has authorized capital under its charter of $100,000, with $47,550 outstanding. It asks permission to issue $52,450 of additional stock, out of which it expects to pay for the Bell property, use $10,000 for a new building and $25,400 for improvements.

Who's Who in the Telephone Game

Facts and Fancies About a Man You Know or Ought to Know

THERE are five states in the central group, comprising the Chicago Telephone Company, The Wisconsin Telephone Company, The Central Union Telephone Company, The Cleveland Telephone Company, and The Michigan State Telephone Company. Before forming this group, there were five chief engineers—one for each company. Now, there is only one chief engineer. That doesn't mean, however, that four former chiefs lost their jobs. It didn't work out that way at all. For example, Billy McGovern used to be the big chief engineer for the Wisconsin Tel. at Milwaukee. He is now the plain engineer who succeeded to James Glendenning Wray's old position, plus, for McGovern not only has Chicago Tel., but he has everything Bell telephonic in Illinois.

He Is Always Qualifying.

Billy McGovern got into telephones as early as 1899. His initiation was with the Old Erie system, which spread all over the Mississippi Valley from North Dakota to Texas. He was buffeted about from one state to another for two years, or as long as there was a construction department. He traveled more in those two years than he ever traveled before or since. And he gathered a lot of experience, during that time, that has stood by him in the squeeze plays of later days. Then he joined the equipment department of the Wisconsin Telephone Company and settled down in his home town. That only meant he got his mail in Milwaukee. For be it known that Billy McGovern never settled down for long at a time. He has run the gamut of telephone jobs from the bottom rung and there are only a few more beyond. He is always qualifying. There isn't any job down the line that he doesn't know.

William Robbins McGovern was born in Milwaukee, not so very many years ago. He is a graduate of Marquette University. He is married. There are three boys at his home who share in the daily welcome and help to keep him from going stale. As if that were possible! He is an associate member of the A. I. E. E.

You often wonder where the big corporations get their good men. When the Bell got McGovern they had the makings of a good man. He didn't disappoint his employer. McGovern has gone right along doing those things that were assigned him to do. He did everything well—so well, in all cases, that more important things were sent his way. It has taken years and years of patience and hard work to come through, but the reward has been abundantly worth while. Today, the Illinois engineer occupies the choice room on the very top floor of the new telephone building at Washington and Franklin streets, Chicago, and directs the labors of one-hundred and forty-five men. These men are in charge of engineering problems that arise in a telephone system embracing the entire state of Illinois, including the second largest installation in the world.

When W. R. McGovern came from Milwaukee, June, 1911, to assume charge of one of the largest engineering positions in the country, it wasn't with any doubt in his mind that he couldn't handle it. He isn't that kind. He simply came on and took charge. He has surrounded himself with a corps of efficient men and has his organization running without friction. It is easier to handle a big job with capable men than it is to handle a little job with incapable men. Back in the earlier days when some of his men didn't know how, McGovern did it himself, showing them as he labored. He learned that trick when he played baseball and football. Nowadays, he rides in a machine and the company buys the lubrication.

There isn't much more to tell about McGovern. He has a shock of curly hair; an engaging smile; eyes that never wabble in their sockets; an athletic body, quick in its movements. Long association with men of big affairs has given him advantage. He can now emulate his superiors. McGovern has never been a slave to his work. He rarely takes it home with him. It has been easy to deliver the day's demands within the day. He learned the trick at school by not lugging his books around. He is practical instead of theoretical. All of his antecedents were that, and most of them went in for constructive work. If McGovern believes in heredity, there's a reason. When a man finds himself doing the things his family did before him, he is apt to find happiness in his own occupation.

Texas Independents in Annual Meet

The best annual convention placed to the credit of the Texas Independent Telephone Association so far was that held October 25, in Dallas. The attendance was large and enthusiastic and it is felt, by the entire association, that much was accomplished.

President J. C. Casler presided and many were heard from on the various questions raised. Buford Adams read a paper on "Toll Line Development in Texas," and was followed by F. V. Newman, manager of the Dallas Automatic Company. Mr. Newman was originally from Grand Rapids, Mich., and, of his vast fund of experience in independent telephony in its earlier days, gave his hearers much in his talk, which he called, "Keeping in Touch With the Subscribers."

J. F. Parker, Liberty Hill, who is probably the pioneer mutual telephone operator in Texas, talked on the "Relation of the Mutual to the Independent." W. K. McQuown of McKinney, read a paper on "Central Office Discipline," and "Suggestions as to the Best Methods of Handling Through Toll Business" was the subject of a paper by J. M. Henshaw of Waco.

J. B. Earle, of Waco, spoke on one of the most important subjects now engrossing the independent telephone people of Texas; his topic was "Legislation and Taxation."

Extracts from his talk follow:

"If any man, be he independent or Bell, has telephone service that does not meet the demands of the people, competition ought to be allowed to come in. My experience is, where there is competition, there is service, and where competition is not, there is not so much service. In the last two years, the Bell company has built three exchanges against us. Our exchanges have grown on constantly, for no other reason than that we have lived close to the people and have given them the service.

"Now, as to taxation, the telephone companies today, without any second in the race, are in first place as high tax payers. We pay four times as much tax as an interurban railway; we pay two times as much as the railroads. The little telephone companies, rural and mutual independent, who help to advance the country and help to develop the social and business interests, pay eight times as much as the owners of land. These conditions ought to be changed.

"We ought to appoint a committee and send it to see if we cannot induce the legislature to at least put the telephone and telegraph companies on an even footing with the electric light and power companies."

The following resolutions were adopted:

Resolved, that the Independent Telephone Association, in convention assembled, enter its protest to the creation of a public service commission because it has proven a menace to the proper development of the telephone business and is absolutely ruinous to the smaller companies; and

Be it *resolved*, further, that this association send a committee to the next session of the legislature to protest against this kind of legislation.

Whereas, the telephone properties are taxed in Texas much higher than are any other properties in the state, and the constitution and laws of the state provide that taxes shall be equal and uniform; therefore, be it

Resolved, that we do hereby earnestly invite the attention of the governor of the state and members of the legislature to this unjust discrimination and respectfully request that justice and equity in the matter of taxation, which a great state and a great people can afford to extend to every interest in Texas, be extended to the telephone interests.

Resolved, further, that a committee attend the next legislature and urge a correction of this injustice.

The officers named for the ensuing year were: President, J. B. Earle, Waco; secretary, W. C. Dillon, Corsicana; treasurer, W. K. McQuown, McKinney; first vice-president, F. V. Newman, Dallas; second vice-president, A. J. Combs, Haskell; third vice-president, F. E. Ebersole, Houston.

Claims Telephone Is Aid to Health

The telephone has been a great factor in improving the health and welfare of the community, according to the view of the editor of the *Medical Review of Reviews*. He says:

"The telephone has been a mighty factor in improving the health and welfare of the community. Health bureaus have been able to accomplish their work more rapidly and effectively by use of the telephone. Ambulance service has been developed to a high state of efficiency through the accessibility of telephones in all parts of the community. Rapidity of service, with promptness in telephoning, have served to save many lives that otherwise might have been lost.

"The private practitioner, it is true, has suffered a marked decrease in his emergency calls through the recognition of the value of ambulance service and the ease with which one may be summoned by telephones. In fact, the doctor's telephone is frequently used to call the ambulance. Only a few years ago the nearest physician was called for minor conditions at all hours of the night. Today the telephone saves many a long and needless journey. Frequently, because of the knowledge and appreciation that a physician may be quickly summoned by telephone in case of real necessity, the doctor is not called at all, as some transitory condition has disappeared before morning.

"In contrast to this small loss is the gain through telephone visits in lieu of office calls. Such visits may be regarded as office visits, on the ground that if telephones did not exist it would be necessary for the patient to seek advice at the office."

Michigan Commission News

The Michigan State Telephone Company has asked permission of the state railway commission to purchase the plant and equipment of the Marquette County Telephone Company.

Secretary Seigmiller, of the Owosso Improvement Association, asked the railroad commission to compel the Michigan Telephone Company to establish a uniform rate in Owosso business places. Merchants think that the company discriminates.

California Commission News

L. W. Warmoth of Paskenta, Tehama County, has applied to the California Railroad Commission for permission to sell his telephone line extending from Corning in Tehama County, to Newville in Glenn County. He wants to sell to the Pacific Telephone and Telegraph Company.

A brief was filed by the Tehama County Telephone Company and the Glenn County Telephone Company in their complaint against the Pacific Telephone and Telegraph Company, in which they ask for interchange of switching.

Digest of Foreign Telephone Literature

Translated for Our Readers

IMPROVED TELEPHONE MICROPHONE.

PETERSEN, a Danish engineer, has made a decided improvement in clearness of communication by heating his transmitter, thus rarifying the air in the same. The result is that long distance speaking has been made much clearer than was the case otherwise. The tests carried on at the Danish experiment station gave excellent results. The sharpness of the sounds transmitted was such that the words could be ditnictly understood when standing several feet away from the receiver, and speaking at the same time into the transmitter held at arm's length. While this idea is not new, a French engineer having developed it to some extent about ten years ago, nevertheless it is worth mentioning, as the possibilities of good, clear long distance communication, seem to be brought nearer to a satisfactory solution.—*Elektr. Zeit.*

INFLUENCE OF ATMOSPHERIC ELECTRICITY ON TRANSMISSION LINES.

This subject, of equal interest for both high tension and low tension lines, was investigated by several French and American engineers, and the results obtained by the French engineers are here given in abstracted form.

With pleasant weather and in a valley or on the plains, the potential varies by about 150 volts per meter, i.e., about 50 volts per foot, for the first 330 feet, by about 40 volts per meter (3.3 ft.) up to an altitude of about 1,000 m. (3,300 ft.), and then by about 15 volts up to about 4,000 m. (13,200 ft.). These values change in the course of the day, and this fact, as also the changes in potential at sunrise and sunset, are often the cause of disturbances. In case of thunderstorms differences in potential varying between —6,000 and +6,000 volts have been measured. If a transmission line has to pass over rough, broken country, where the altitudes vary considerably, the danger of static phenomena due to the differences in potential are imminent. Another cause of trouble is the change in the air field several feet above ground. The accompanying illustration, Fig. 1, gives a fair idea of this phenomenon. The distribution of the equipotential areas shows that grounding the line will tend to procure a potential of zero in the zone at the height of the conductors. Possible electric discharges in a thunderstorm will then pass directly to earth instead of taking their path over the transmission line. In addition to this, it was found that the effect of static charges at greater altitudes was to decrease these considerably. Most of the protective devices used against the effects of atmospheric electricity give efficient protection to the generators at the power plants, but give very little protection comparatively to the transmission line itself. Such a case may arise when a thunder cloud, charged with electricity, induces a charge in the line at a sufficient distance from both terminals. To avoid this, it is best to install insulators with a high safety coefficient, provided the lines are not grounded.

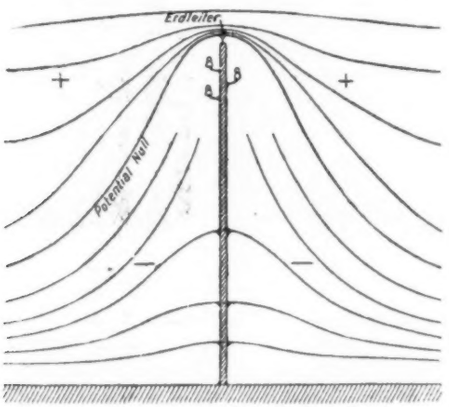


Fig. 1. Air Field for Transmission Lines.

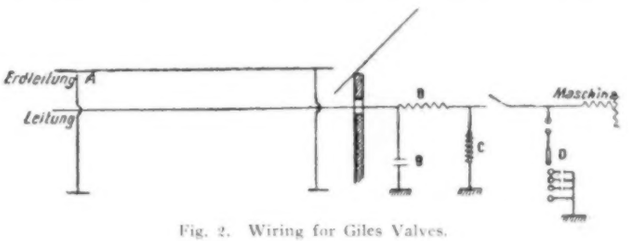


Fig. 2. Wiring for Giles Valves.

The requirements which a good ground circuit must meet are the following: 1. High mechanical strength, since a break would cause a direct short circuit when touching the charged wire. In general it is better to use a covered cable rather than a plain wire. 2. As material galvanized steel wire should be used, as a better damping effect of the inductive phenomena in high frequency lines is obtained, and since the wire is less liable to oxidize. 3. The ground circuit should be connected with ground having excellent conductive properties, choosing such ground at frequent intervals along the line. Such practice will prevent lightning accidents, and will increase the efficiency of telephone service in case high tension wires and telephone wires are carried on the same poles.

It was shown that the equipotential areas during thunderstorms sometimes take on spherical shapes, and then are liable to do great damage, especially if near to one of the power terminals, often causing short circuits and disturbances at the power plant.

Dynamic phenomena are those in which the atmospheric electricity passes along the conductors. The transformer stations or the power plants must be protected against the effects of high frequency waves on the windings of the generators. The high frequency waves observed during thunderstorms are caused by inductive discharges, and have a high number of vibrations. The effect of such high frequency waves on transformers of even 30,000 to 40,000 volts, has been such as to destroy the windings, even though the potential of the atmospheric electric waves was hardly more than a few hundred volts. If a condenser is placed between the windings and armatures of the

generators and the transmission line, the high frequency waves are sent back into the line, eliminating all danger. The condenser does excellent work, since its resistance is inversely proportional to the frequency of the incoming electric waves. In order to conduct static electric charges to earth, especially near transformer stations and power plants, either self induction coils with iron cores, or the so-called "Giles valves" can be used. The resistance of a coil is low, and the static charges can easily pass to earth in form of direct current. The amount of alternating current used is low, and the loss in electric energy negligible.

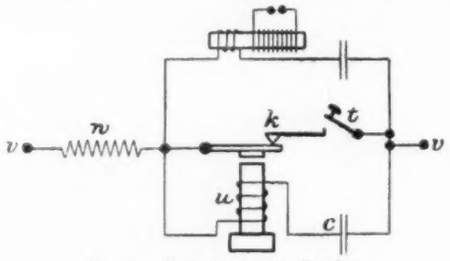


Fig. 3. New Automatic Cut-Out.

The advantage of the Giles valve over the ordinary horn gap lightning protector is this. There is no sudden resistance between two conductors, leading sometimes to excess voltages, but there are a number of valves placed in parallel, which extinguish the light arc every half period, and thus increase the resistance only very slowly, depending on the increasing excess voltage. These valves have been used in France, and proved excellent, with as low a total resistance as 70 ohms. Figure 2 shows such an arrangement. Each two of the series wired valves are exposed to the excess voltages, and each of them is figured for one-half of the normal voltage possible between conductor and earth.

A is a steel cable for grounding the line, placed above the transmission line, and protecting it against direct effects of lightning. *B* are condensers, combined with a self induction B^1, consisting of iron wire. These are to eliminate the effect of high frequency waves. *C* is an induction coil with iron core, which allows the static charges in the line to flow to earth. *D* is the "Giles valve," which sends the excess tensions of

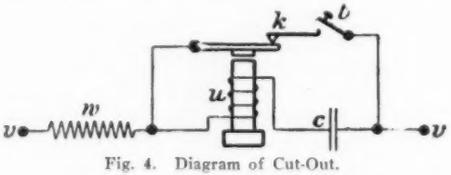


Fig. 4. Diagram of Cut-Out.

medium and low frequency, occurring within the line itself, to earth.—*Elek. Zeit.* and *La Revue Electrique.*

A NEW AUTOMATIC CUT-OUT ARRANGEMENT.

The automatic cut-outs used at present are only feasible for a very low voltage, for with higher voltages, wire is needed for the magnet windings, which cannot be used practically, being too small in diameter. It is sometimes desirable, however, to feed the ordinary low voltage instruments like telephones from high voltage lines. The new system, shown in Figs. 3 and 4, allows this to be done.

In Fig. 3, *u* is the automatic cut-out, *w* a very high series resistance, and *c* a condenser of one microfarad. The contact *k* of the interrupter is at first closed, the key *t* is open. The condenser is charged at the line tension *v*, *v*, and discharges by way of the magnet spools in form of a considerably damped oscillation, when the key *t* is pressed down. The armature is attracted by the magnetic impulse, and contact *k* is opened, so that the condenser can charge again. During the return of the armature the condenser is discharged again, and this circuit repeats, until key *t* is released again. The contact *k* interrupts only the low current flowing through the series resistance. Fig. 4 shows the arrangement when using the cut-out with small spark coils, where it is best to place a special

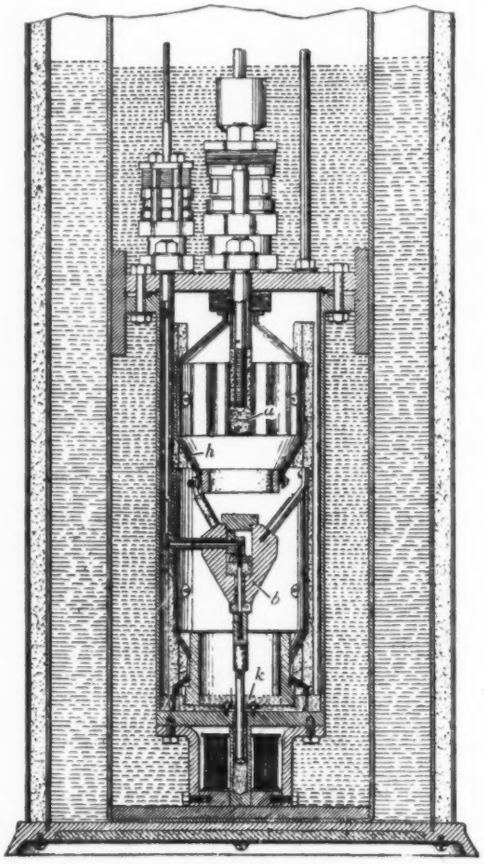


Fig. 5. French Type of Rectifier.

condenser in parallel with the interrupter. In place of the inductor, a high frequency transformer can be used, whose secondary circuit furnishes slightly damped, high frequency oscillations for measuring purposes.—*Elektr. Zeit.*

NEW MERCURY ARC RECTIFIERS.

The mercury arc rectifier has found much favor for transforming alternating to direct current, and may be used not only for small but also for large capacities. The earlier form in which glass was used for the rectifier had to be replaced by the more durable iron or steel vessel. The problem giving most trouble was the introduction of the electrodes, which had to be airtight, permitting as high a vacuum as possible.

Packing of asbestos and mercury gave much better results than the older packing with oil, and had the advantage of not allowing any oil to enter into the vacuum vessel proper, when taking the apparatus apart. While these problems met a fairly satisfactory solution, it was soon seen that much care would have to be paid to the placing of the anodes, especially if the rectifiers were to be used for tensions of 220 volts and above. The danger of reversal of current increases with increased capacity. Under normal conditions the valve action of the rectifiers is so perfect that hardly a milliampere of current flows in the wrong direction, i.e., is reversed. But at times it may happen that the valves do not act, and that no resistance is opposed to the current flowing in the reverse direction. This always means a short circuiting at the source of power, resulting with glass rectifiers in the destruction of the glass vessels, and with metal rectifiers in disastrous explosions.

The causes for reversal of current may be summarized as follows: 1. The pressure in the vacuum vessel is too high, and the change from the harmless spark effect to the dangerous arc is very frequent. 2. If the electrodes acting as anodes are struck by the mercury globules which may be condensed, they take on the action of a cathode and give trouble. 3. If the solid electrodes are struck by the so-called negative flame, starting at the cathode, or else from the ascend-red-hot vapor, which is a good conductor, a reversal of current is imminent.

The faults mentioned in 2 and 3 are the ones needing special attention, since the one mentioned in 1 is

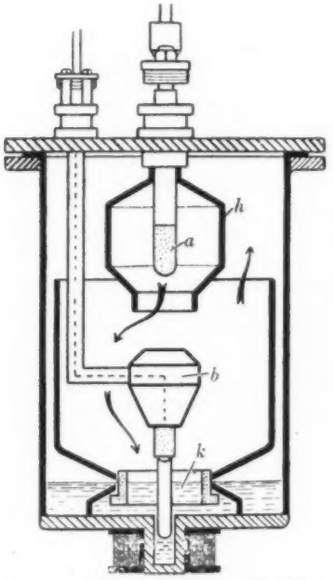


Fig. 6. Details of French Rectifier.

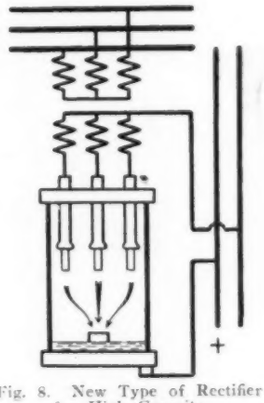


Fig. 8. New Type of Rectifier for High Capacity.

well taken care of by the improved packing systems. The older glass vessels for smaller rectifiers had the anodes either in a straight line or else in properly bent arms. In the metal rectifiers of large capacity this could not be done readily and plain, smooth steel pipes were used, introducing the anodes through the upper plate. Placing the solid electrodes perpendicularly above the cathode has eliminated the bad effects mentioned in 3. In order to retain the cylindrical shape, however, the current of vapor had to be led properly away from the vicinity of the anodes. Figs. 5 and 6 show a French rectifier which has given excellent results in practice. In Fig. 6 a sort of deflector *b* is placed between the anode *a* and the cathode *k*. This deflector is to convey the ascending vapor away from the anodes. The current carrying part of the arc above the deflector passes through the protective hood *h*, made of tin, to the anode. The entire apparatus is placed in an oil bath, assuring not only a cooling but also an airproof effect. The oil bath itself is within

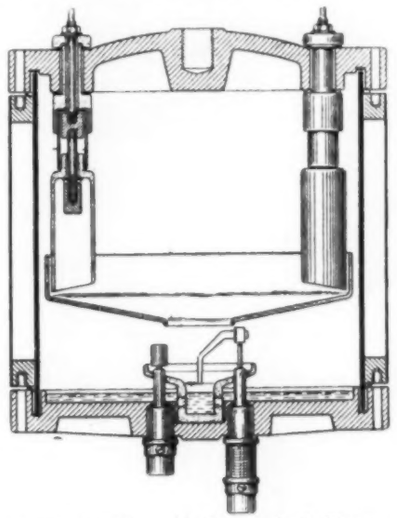


Fig. 7. Rectifier with Several A. C. Phases.

a jacket of metal containing water, which is always kept at 100 degrees C. Since this rectifier has only one anode, it is necessary to keep the cathode continuously active by means of an auxiliary anode, which is fed by direct current. The latter is placed below the deflector *b*, and receives current through the cover plate, as seen in the figure.

While this arrangement protects the anode, it had several drawbacks. The arrangement of the anode with deflector prevents the introduction of several alternating current phases into the vacuum vessel. The current load per anode with only one anode is also very low, for which increasing heating effect, the surface of the anode will be heated irregularly, favoring the destruction of the anode material, and increasing the tendencies towards reverse currents. Several anodes seemed necessary, and the arrangement seen in Fig. 7 seems to meet all these requirements.

The chief difference here is in the arrangement of the anodes, which are not placed at or near the axis of the vessel, but are placed very near to the sides of the vessel. The vapor coming from the anodes need not be deviated from its path, but is conducted to a collecting tank, which embraces all of the anodes and is then passed to the cathode.

The idea of arranging the anodes laterally, away from the center of the cathode, has given good results. It was found that the vapor could be regulated in a manner which was as good as that obtained in the glass rectifiers. The current conducting vapors, under the influence of the electric field, ascending from the cathode, pass through the central opening of the collecting vessel, above which they branch off to the different anodes (Fig. 7). The non-conductive vapors, however, ascend vertically, in part condense along the

upper walls of the vessel, in part are crowded out by the inclined walls of the collecting tank, which begins somewhat above the cathode. The conductivity of the vapor paths proper is improved through the early and effective removal of the non-conductive mercury vapors.

The eccentric arrangement of the anodes allows, moreover, the use of a much larger number of positive electrodes than could be used with the axial arrangement. Placing several a.c. phases in one vessel, as shown in Fig. 8, allows for the important self-excitation in rectifiers of large capacity, and makes a much simpler apparatus in every way.—*Elektrotech. Zeit.*

New York Commission News

The New York Public Service Commission, Second District, has served upon the Earlville Telephone Company the complaint of John R. Parsons, president of the Earlville Electric Light Company, Madison County.

This complaint asks that the telephone company have its switchboard in continuous operation or extend the service from 5:30 a. m. to 10 p. m., every day instead of the present service from 7 a. m. to 9 p. m., daily, and one hour on Sunday morning and on Sunday evening. Reference is made to the location of 700 patrons and to the need for this extension of service to accomodate persons who wish to telephone for the bus to take either two early morning trains or one evening train. These leave at times when the telephone company is not operating its switchboard.

Other allegations of the complaint refer to the overloading of the company's line, claiming that in several instances there are from 12 to 19 telephones on one line; also the company's lack of modern equipment, making it difficult for persons to be heard a mile apart. Specific instances are recited of slack wires and other unsafe conditions and attention is directed to the failure of the company promptly to make repairs or string its wires at a safe distance from the electric light wires.

The commission has received notice from the New York Telephone Company that it has purchased and acquired the physical property and business of the Commercial Union Telephone Company, comprising the exchanges at Warrensburg, Lake George, Ballston Spa, Schuyverville, Greenwich and Valley Fals. The notice states that the company anticipates making further purchases of property from the Commercial Union Telephone Company in the near future.

The commission has received complaints that in certain instances prepayment has been made for delivery of telegrams, when in fact the messages were delivered by telephone without charge. Following an investigation of the division of telegraphs and telephones, a statement has been received from the Western Union Telegraph Company that the entire subject has been taken up by its operating officials and accounting department, and that it is issuing instructions that in every case in which the message is telephone to the addressee without expense for the telephone service, and where the addressee expresses himself as being satisfied with the telephone delivery and as not desiring the delivery of a written copy of the message by messenger, the office of destination shall notify the office of origin by mail of the facts and request the originating office to refund the delivery charge to the sender. The originating office will thereupon make such refund.

The Northwestern Telephone and Telegraph Company, which operates in and about Carthage, N. Y., has been authorized by commission to issue its twenty-year gold coupon bonds, bearing interest at the rate of 5 per cent per annum, to the par value of $11,000, bonds to be sold at not less than 95, and the proceeds to be used for a new switchboard, new cables, new toll circuit between Carthage and Black River, new toll circuit from Benson Mines to Harrisville, and for refunding obligations of the company incurred for capital purposes.

The commission has received a complaint from Richard Harding Davis directed against the New York Telephone Company. Mr. Davis complains that he has a contract with the telephone company for service at Mt. Kisco, but that it has neglected and failed to render and furnish proper telephone service under the contract, and for more than three weeks has neglected and refused to furnish proper or efficient service, the company permitting and allowing its line to remain out of service for long periods of time after notice, and it having failed and neglected to cause proper inspection of and necessary repairs to its line, and the telephone company allowing and permitting its line to remain out of repair after being notified of defects to the great annoyance and damage of complainant. The commission through its inspectors will make an investigation of the service complained of.

The commission has denied the application of the New York Telephone Company for a rehearing on the order made by the commission October 15 requiring the New York Telephone Company to furnish telephone service to the Metropolitan Telephone & Telegraph Company at its office, 135 East 16th street, New York City. The commission has also denied the application made on behalf of the parties interested in the former Metropolitan Telephone & Telegraph Company which was dissolved in 1896, asking for leave to intervene in this proceeding.

The commission has received a complaint from Alfred H. Weston of Brooklyn asking the commission to require the New York Telephone Company to install at his place of business a booth with public slot machines for coin in place of the private service which he now has. He states that at present there is no booth on his side of Fulton street or within a quarter of a mile from his office. He urges that in a building devoted for office purposes there is more reason for a booth than in the candy or cigar stores, where he states they are plentiful. The complaint has been served on the company and an answer required within twenty days.

The commission has received notice that the Hamilton Telephone Company, operating at Hamilton and vicinity, Madison county, has sold its physical property and business to the New York Telephone Company for the sum of $11,850, and the Hamilton Company has ceased to do business.

$1,000,000 Extension for British Columbia

During the next six months the British Columbia Telephone Company will expend $1,000,000 for telephone extensions in British Columbia. This amount will be utilized in erecting two or possibly three new exchanges in Greater Vancouver in making an addition to the Victoria Exchanges, recently completed, putting up new poles, laying cables and replacing other lines. The City of New Westminster will benefit largely as a result of the extended program. The total expenditure in bringing that city's system to a modern standard is estimated at fully $125,000.

Recent Telephone Patents

By David S. Hulfish

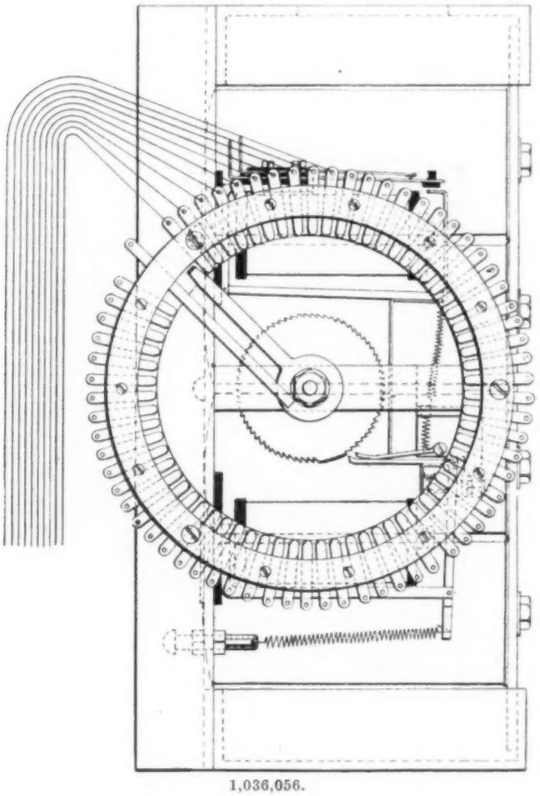
U. S. PATENT No. 1,035,971. Selective Signaling Apparatus. Daniel W. Kneisly, Dayton, Ohio, assignor to the Dayton Telephone Lockout Manufacturing Company, Dayton, Ohio. Filed May 3, 1909.

The device covered by this patent is a sub-station apparatus for selecting upon party lines and for lockout stations which are not parties to a conversation. The mechanical arrangement provides a ratchet with certain deep teeth, and the magnetic armature which carries the pawl driving the ratchet is arranged to make one electrical circuit when the pawl is in a shallow tooth of the ratchet, and two electrical circuits when the pawl is in a deep tooth of the ratchet. A yielding member in the contact device of the armature provides the facility for closing either one or two circuits as required.

1,036,056. Impulse Transmitter. Charles R. Austin, Los Angeles, California, assignor to Southern California Manufacturing Company, Los Angeles, Cal. Filed Feb. 15, 1911.

In his preliminary description of his invention Mr. Austin says:

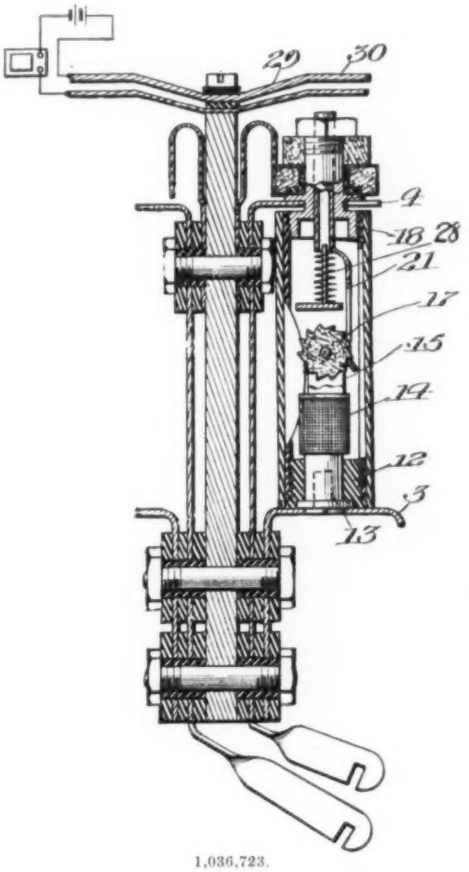
This invention relates to a dial operated impulse transmitter for telephone systems, and the main object is to furnish a more perfect electric impulse and to produce the impulses consecutively of uniform character. The ordinary impulse transmitter is operated mechanically and involves a spring and governor which are liable to vary somewhat in operation, both as to time and character; while, in the present invention the mechanism of the impulse transmitter is operated electrically and exactly measures each impulse, so that all impulses are substantially uniform and in more perfect time. This enables the switch to be operated much faster and with



1,036,056.

greater accuracy. Any inequalities in the impulse affects both the impulse transmitter and the switch, whereby the members sent out by the impulse transmitter will necessarily correspond with that set by the switch. Another advantage is that there is no return movement of the manually operated indicating arm which, when once placed on a certain number, will stay on that number and repeat the same unless reset at another number.

Another object is to produce automatic ringing, whereby the operator sets the indicating arm at the number to be called, the dial mechanism then automatically transmits the required impulses to properly set the switch and when the switch is set, the dial mechanism automatically sends the ringing current over the line for a definite period, at the conclusion of which the ringing stops, this operation taking place without attention of



1,036,723.

the operator, except the setting of the indicating arm at the number to be called.

The device in question is a mechanism for use upon a telephone switchboard in connection with such lines as trunks having an automatic switching device at the distant end, or lines having a number of stations equipped with stepping selectors either for ringing the station selectively or for admitting certain stations to the line for conversation while keeping other stations locked out. A circular device for sending impulses has a movable arm which is driven by electric impulses acting upon a magnet and ratchet. As the arm moves it makes with its moving end the necessary contacts to furnish impulses over the trunk or telephone line until it engages a controlling contact upon which has been set the indicator device to indicate the number to be called. When this point is reached the moving arm no longer sends impulses but instead proper ringing currents are sent over the trunk or telephone line. The means for moving the arm is electrical, an electrical vibrating relay being provided which furnishes electrical impulses to the magnet and ratchet, the impulses thus provided being very uniform in nature.

1,036,265. Apparatus for Submarine Telegraphy and Signaling. E. Klupathy and C. Berger, Budapest, Austria-Hungary. Filed Dec. 3, 1910.

A submarine telegraphic and signaling system, using the telephone as a means for receiving signals, and including a vibratory member for producing signals, and a sounding board located in the water, the sound or signal producing mechanism being out of the water but directly connected with the sounding board.

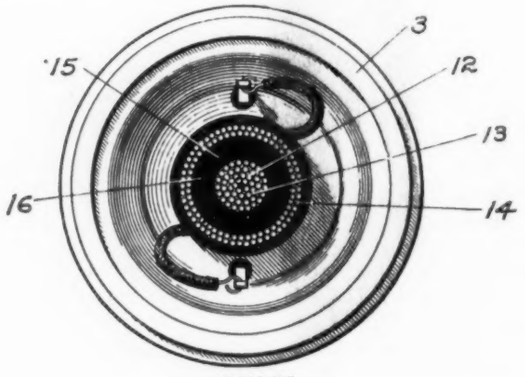
1,036,723. Electrical Circuit Protector. Charles A. Rolfe, Chicago, Ill., assignor to Frank B. Cook, Chicago, Ill. Filed Nov. 30, 1906.

The protector is designed and patented in the form suitable for mounting in banks for central office protector racks. The protector is of the self-soldering heat coil class, and is illustrated in the accompanying figure.

In the figure one of the heat coil elements is shown in detail. The line terminal is labeled *3* and is connected through *13* and the coil or winding *14* to the neck *15* and ratchet wheel *17*. The spring finger *21* engages the ratchet wheel as a pawl and is pressed upward by the spiral spring *28*. Above the spring *28* the spring finger *21* assumes a tubular form and projects upward towards the alarm springs *29* and *30*. The tubular portion of the spring finger *21* is electrically in contact with the sleeve *18* which surrounds it, which in turn is in contact with the spring *4* which passes downward to the switchboard terminal.

The circuit through the heat coil normally is through the elements *3*, *13*, *14*, *15*, *17*, *21*, *18*, *4*, but in case the ratchet *17* should release the spring finger *21*, the spring *28* would propel the spring finger *21* and accomplish two results, (first) break the circuit just described, and (second) cause the extreme upper end of the tubular portion of the spring finger *21* to engage and close the alarm springs *29* and *30*.

The ratchet *17* is soldered to its axis with a solder of low melting point, and it thus turns and releases the spring finger *21* whenever excess current causes undue heating of the coil *14*.



1,036,805.

Whenever *17* is loosened by the softening of this solder and turns and releases *21*, the principal circuit is opened and the heating effect ceases. Ratchet *17* cools and its solder hardens, fixing the ratchet in its new position. To reset the device for another operation it is necessary only to force the projecting end of the tubular portion of spring finger *21* back into the body of the device and against the tension of spring *28*, when the finger *21* will engage some one of the teeth of the ratchet in its new position, completing the principal circuit as before and being in readiness for service and consequent operation immediately.

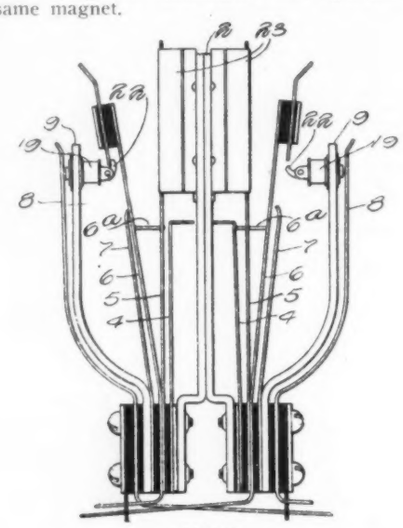
1,036,805. Telephone. W. W. Dean, Elyria, Ohio, assignor to Dean Electric Company, Elyria, Ohio. Filed August 6, 1909.

The novelty of this improved receiver is found in the arrangement of the core of the spool of wire. The core is composed of fine iron wires which are bent back like return-pole magneto circuits. These wires are insulated from each other, and are adapted to attract the diaphragm at both ends of each of the wires.

The illustration shows the full front view of the receiver with the cap and diaphragm removed. At *12* and *13* are shown, presented toward the observer, the ends of the core wires which lie within the spool of wire, while at *14* are shown the other ends of the same wires. The spool which holds the operating winding of the receiver is shown at *15* and *16* and the outside containing cup is shown at *3*. There is no permanent magnet, and one of the advantages claimed is that a receiver winding of low resistance may be employed with the improved type of core construction.

1,036,817. Pole Changer. Charles J. Erickson, Chicago, Ill., assignor to First Trust and Savings Bank, Trustee, Chicago, Ill. Filed August 11, 1906.

It is customary in pole changers or ringing current generators of the vibratory type to supply the intermittent contact for the ringing current and also the intermittent for maintaining the vibration both from one moving part. Mr. Erickson finds advantages in using two armatures, and operates them both from the same magnet.



1,036,818.

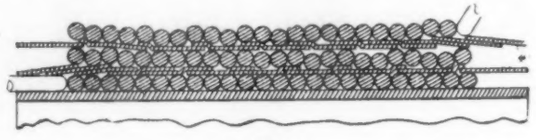
Of the six claims in the patent the two quoted below are very definitely descriptive of the improved device.

1. In a pole changer, an operating circuit, a generating circuit, an interrupter in the operating circuit, electromagnets in said operating circuit provided with an armature for actuating said interrupter, an independent armature for said magnets provided with contact controlling the generating circuit, and stationary contacts co-operating with said armature contacts for causing an intermittent reversal of the flow of current in the said generating circuit, said last-mentioned armature being independent of the said interrupter, the two armatures being disposed at opposite ends of the magnets, said operating circuit being independent of and distinct from the said generating circuit, for the purpose set forth.

2. In the pole changer, an operating circuit, a generating circuit independent of and distinct from said operating circuit, an electromagnet provided with means including a plurality of armatures for controlling both circuits, and a source of current common to both circuits.

1,036,318. Line Protective Device. John Erickson, Chicago, Ill., assignor to Automatic Electric Company, Chicago, Ill. Filed November 22, 1911.

This improved protective device is of the type adapted for



1,036,936.

central office protector racks. The illustration accompanying shows at the left a normal heat coil with the tongue *22* engaging and holding the arm *6* in a restrained position and in contact with the spring *7*. At the right the device is shown in its released or operated condition, the tongue *22* having released the arm *6*, which is moved to break from the spring *7* and, by means of the pin *6a*, it engages spring *4* which it presses against the grounded body *2* of the protector rack. The circuit of the heat coil *19* is from the outer spring *8* to the heavy supporting spring or curved bar *9*. The spring *5* carries the circuit of the line wire to the carbon arrestor blocks *23*.

1,036,933. Transmitter for the Deaf. Henry Tideman, Menominee, Mich. Filed June 11, 1909.

This transmitter is especially adapted to receive sounds spoken at a considerable distance from the transmitter so that

all the conversation in a room may be taken up by the transmitter even though the speakers may be at different distances from the instrument. The case is constructed with two sets of conical reflecting surfaces which are designed particularly to accomplish the desired result.

1,036,936. Electrical Coil and Method of Making the Same. Charles R. Underhill, New Haven, Conn., assignor to the Acme Wire Company, New Haven, Conn. Filed January 19, 1912.

An electrical coil composed of alternate layers of wire and insulating material, the insulating material being applied in the form of spirally wound tapes which are differentiated in number of turns per inch so as to differentiate the bulk of insulating material in accordance with the difference of potential between the layers of wire.

1,036,961. Telephone Exchange System. E. E. Clement, Washington, D. C., assignor to North Electric Company, Cleveland, Ohio. Filed March 17, 1905.

A telephone exchange has a plurality of subscriber's lines, a number of first selector switches less than the number of subscriber's lines, and cord pairs manually controlled for bringing the first selector switches into connection with calling lines. After being connected by the cord pairs, the selector switches may be controlled by the subscribers to select the lines wanted, and to restore the switches after use, and signal devices are connected with the manual portion of the apparatus to indicate to the operators the necessity for connection and disconnection.

1,037,053. Telephone Call Register. Charles V. Richey, Washington, D. C., assignor to Richey Telephone Lock and Call Register Company. Filed April 17, 1911.

The lockout device comprises a switch to close or open the circuit for calling central and for conversation, and to maintain the circuit closed or open when operated, a key adapted to open and close the switch as determined by the subscriber, and an electromagnet also adapted to control the switch and itself controlled by signaling current from the central office, whereby the station may be rendered continuously dead for originating calls but still may be controlled to receive calls.

The Law and the Telephone

By E. J. Wenner

TELEPHONE AND ELECTRIC LIGHT WIRES—OCCUPANCY OF STREETS—JUDICIAL NOTICE—MATTERS OF COMMON KNOWLEDGE.

THERE are many matters of which courts take judicial notice and it is not strange that in the development of the telephone and the electric light, courts take such notice of certain matters pertaining to methods of operation, service to patrons, etc.

In a recent case in which the Supreme Court of Minnesota had occasion to pass upon the rights of a public service corporation to use streets, alleys and public places of a city, the court made use of the following language:

"It is a matter of common knowledge and proper to be judicially noticed that cities are divided by streets and alleys into blocks and subdivisions of blocks, the blocks and subdivisions thereof being very generally owned by private individuals, and the streets and alleys being subject to a public use and under the police control of the municipality; that public service companies, using wires for the distribution of the service supplied by them, such as telephone and electric light companies, customarily set poles in the streets and alleys, and string wires along and over and across the same; that such wires can be strung only a few hundred feet in any direction without crossing a street or an alley, even where the line is strung upon poles set upon a private right of way; that many persons are served by these wires or lines that are thus strung along and across the streets and alleys as above stated; and that when the consent of the city is necessary, in order that the company may lawfully set such poles and string such wires as may be necessary to carry the service to the persons so served or to be served, the company, and not its patrons or applicants for service, attends to the obtaining of such necessary consent by application to the council or otherwise, and it is to the company, and not to its numerous patrons, that the permission is granted and the permits issued."

State v. Consumers Power Company (Minn.), 137 *Northwestern Reporter*, 1104.

SUIT FOR RENTAL—DEFENSE OF DEFECTIVE SERVICE.

The New York Telephone Company brought suit against a subscriber named Simon to recover on a contract for telephone service furnished to the defendant. Simon admitted the making of the contract, but alleged in his answer that from and after a certain time the service was defective and of no value to him. He claimed to be unable to use the telephone and to transact his usual and ordinary business by means of it.

A technical issue was taken and a question as to the sufficiency of the defendant's pleading was raised by plaintiff's attorney. Upon argument to the court it was held that the allegations of defendant worded as they were constituted mere conclusions of law and that no issue of fact was raised.

It will be seen that the telephone companies are having trouble in collecting bills and that close questions of the sufficiency of pleadings are being constantly raised in litigation.

The case mentioned above is reported in 77 *Miscellaneous Reports* (New York), 192.

Telephone Society of Wheeling Meets

The initial meeting of the Telephone Society of Wheeling, West Virginia, for the season of 1912-13 was held recently in the Y. M. C. A. auditorium, about fifty members, many of them from other towns, being present. Papers covering the various branches of telephony were read. One of the most interesting of these was that of E. Reiser of the commercial department of the Bell, whose subject was "What Every Telephone Man Should Know." J. D. Gordon, one of the Bell plans supervisors, delivered a brief address, as did a number of others.

The society plans to hold four meetings this year, when subjects of interest to the three chief departments will be discussed.

The out-of-town attendants included F. K. Singer, plant instructor at Pittsburg; Commercial Managers C. Montague, Parkersburg; George S. Perry, Cambridge; H. T. Sap, Steubenville; Frank Swaney, East Liverpool; Williamson, Sistersville; C. Collins, Marietta; Dornberger, Urichsville, and Plant Chiefs H. W. Vannoy, Marietta; E. J. Ellsworth, Fairmont; D. B. White, Urichsville, and C. J. Johnson, Steubenville.

Construction Costs in Canada

Itemized costs of telephone construction in Canada are given as follows by the Canadian *Electrical* News:

STRINGING MILE OF TELEPHONE LINE.

Stringing one mile of telephone line composed of two No. 10 T. B. W. P. iron wires, through porcelain knobs on 5/16 in. span wires.

1 foreman, 9 hours, at $2.66	$ 2.66
2 linemen, 18 hours, at $2.50	5.00
1 groundman, 9 hours, at $1.75	1.75
1 team, 9 hours, at $4.00	4.00
Total	$13.41

UNLOADING CARLOAD CEDAR POLES.

Unloading a gondola carload of 124 cedar poles, composed of 8, 7½ in. x 35 ft.; 50, 5 in. x 20 ft.; 56, 7 in. x 30 ft.; 10, 7 in. x 35 ft.; time, 4½ hours.

1 foreman at $80.00 per month	$ 1.33
2 linemen at $0.27 7/9 per hour	2.50
2 groundmen at $0.19 4/9 per hour	1.75
1 team at $ .40 per hour	2.00
Total	$ 7.58
Cost per pole	.0611

Note 1.—The $4.00 rate for team included the driver and horses. The driver materially assisted in the work, the horses were used very little, but as the team was hired as part of the line force, the total expense (team and man) was included in the cost.

Note 2.—Weight of 6 in. x 30 ft. cedar pole = 350 lbs.; weight of 7 in. x 30 ft. cedar pole = 450 lbs.; 160 6 in. x 30 ft. cedar poles make a carload.

DIGGING OUT POLES.

Digging out ten 6 in. top, 25 ft. and 30 ft. cedar poles; time used, one day. Condition of ground, clay and some quicksand. Poles set 5 ft. in ground.

1 foreman	$ 2.66
1 lineman	2.50
1 groundman	1.75
1 team	4.00
Total	$10.91
Cost per pole	1.091

DIGGING HOLES FOR POLES.

Hole for a 5 in. x 20 ft. telephone pole in gravel, per pole	$0.57
Add $0.07 for board of men	.07
	$0.64
Hole for 5 in. x 20 ft. telephone pole in clay, per pole	.546
Add. $0.07 for board of men	.07
	$0.553
Hole for 7 in. x 30 ft. trolley pole in sandy soil	$0.677

APPLYING CABOLINEUM AVENARIUS.

The first coat was applied for a distance of 7 feet from the butt, on the butt and top. The second coat was applied from a point 5 feet from the butt to a point 7 feet from the butt. Both coats applied hot.

31 5 in. x 20 ft. cedar telephone poles used 1 gallon of preservative at $0.70 for first coat. Cost, including gasoline used to heat preservative, per pole	$0.0427
31 5 in. x 20 ft. cedar telephone poles used ½ gallon of preservative at $0.70 for second coat. Cost, including gasoline used to heat preservative, per pole	.016

MILE OF TELEPHONE LINE.

Cost of stringing 1 mile of a telephone line composed of two No. 10 galvanized iron wires on pony glass insulators, mounted on 1 in. oak brackets, the brackets held to pole by two No. 30 nails. This line was at an average height of 11 ft. except at farm and highway crossings, where the height was made 15 ft. and over.

Labor in installing brackets, glass and tying in wire at $15.81 per mile	$15.81
80 brackets at $0.016	1.28
80 pony glass insulators at $0.017	1.36
160 No. 30 nails, 25 to the lb., at $0.025 per lb.	.16
Tie wire	.25
Two miles of No. 10 D. G. iron wire at $0.04 per lb.; 225 lb. at $10.20 per mile	20.40
	$39.26

SETTING POLES.

Setting 21 5 in. x 20 ft. cedar poles. Foreman, 7 hours; linemen, 14 hours; groundmen, 4 hours; team, 4 hours.

Total cost	$9.30
Cost per pole	.443

Setting 21 6 in. x 30 ft. cedar poles. Foreman, 12 hours; linemen, 11 hours; groundmen, 47 hours.

Total cost	$15.71
Cost per pole	.705

Setting 2 7½ in. x 35 ft. cedar poles.

Total cost	2.18
Cost per pole	1.09

TELEPHONE CONSTRUCTION.

Total cost to string one mile of telephone wire, composed of 2 No. 10 D. B. W. P. iron wires, through center groove porcelain knobs tied to 5/16 in. span wire.

Labor in putting on knobs, 106 knobs at $0.109 per knob	$ 11.55
Labor in stringing wire through knobs at $13.41 per mile	13.41
Cost of two miles of No. 10 D. B. W. P. iron wire at $33.00 per mile	66.00
Cost of 106 knobs at $0.0216	2.29
Tie wire	.45
Cutting in five transpositions, or one transposition every ten poles at 100 ft. spacing of poles	6.99
Total	$100.69

BRACKETT INSTALLATION.

Labor installing 35 10 ft. flexible pole brackets; brackets already fitted with span wire and hole already bored in pole for brace-rod.

35 brackets at $0.37 each $12.95

Honor Retiring President Keller

Jasper N. Keller, whose resignation from the presidency of the New Bedford Telephone and Telegraph Company of Boston, Massachusetts, took effect November 1, after twenty-eight years of service, was paid signal honor at a farewell dinner at the Union Club, tendered by the various department heads who had served under him for years. Samuel L. Powers, attorney for the company, presided.

During the evening Mr. Keller was presented with a beautifully engrossed testimonial, reading as follows:

To have borne the responsibilities of high office with courage; to have been faithful to the trust imposed; to have given unstintedly of one's experience, talents and energy to the lasting advantage of a great public service institution; and to have been a leader who has maintained the esteem and high regard of those about him is indeed to have filled "the unforgiving minute with sixty seconds' worth of distance run."

Jasper N. Keller, pioneer in telephony, builder, administrator, gentleman and friend, as you lay aside your official connection with the New England Telephone & Telegraph Company, we who have been associated with you bid you farewell with the most genuine regret. That the future may have for you and yours the fullest measure of happiness is the sincere wish of those who have gathered tonight to do you honor.

The new president of the company is Philip L. Spalding. Mr. Keller is still a director, and will continue to serve in an advisory capacity.

DEPARTMENT of RAILWAY TELEPHONES

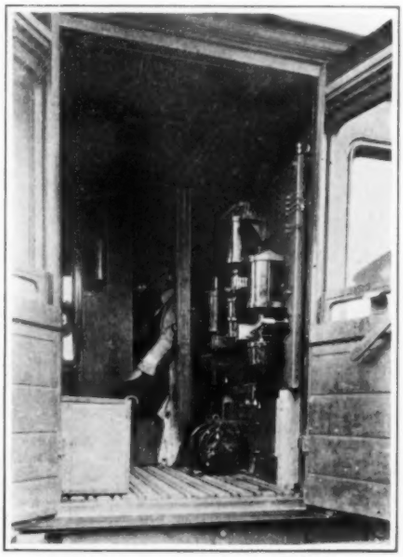
How the Railophone Works

Talking to Moving Trains

IN THE August number of TELEPHONE ENGINEER appeared a very complete description of the "Railophone," that ingenious system devised by the British electrical engineer, Hans von Kramer. The Railophone provides a method of telephoning to and from a moving train, thus affording a promising scheme of railroad protection. The article in question was not illustrated, however, and we are now enabled to present a photograph showing the installation in a railway coach, with the guard in the act of telephoning, as well as circuit diagrams of both the central equipment and the train apparatus.

The following brief description will enable the reader to understand the diagrams:

Each section of track between two consecutive signal stations is divided into three distinct parts: The main section, from one mile to ten miles or more in length; the restoring section, and the clearing section, each about 100 yards long.



The Train Guard using the Telephone.

The following results have been obtained with the apparatus: When a train enters the main section, a red lamp is lit in the signal station. This lamp is placed over the signal controlling the semaphore. The red lamp remains lighted until the train has passed through the main section and the restoring section beyond. Simultaneously with the lighting of the lamp, a bell, or buzzer, is sounded, as an additional warning to the signalman to protect the section by displaying the danger signal. If he does not obey the warning within ten seconds, the signal lever is automatically operated, and its movement is recorded. The signal lever, whether moved automatically or by the operator, remains electrically locked in the danger position until the train has left the section. If the lever is operated automatically an alarm gong outside the signal box is sounded and the time of the occurrence is automatically recorded, so that a strict control is kept over the signalman. When the train enters the clearing section, the red lamp is automatically extinguished and a green lamp is lit. When the train leaves the clearing section, the green lamp is extinguished and the signal lever is unlocked. After the train has sent out signals indicating its entrance into the main section, it is enabled to receive signals or instructions by telephone or telegraph. It can be brought to a standstill by the signalman at will, or the conductor can place himself in communication with the signal section.

If a second train ignores the danger signal and enters the section, both trains are automatically stopped. Should a second train enter the section in the opposite direction, the same result ensues, so that head-on collisions are impossible. When the train has left the clearing section, the instruments at the station are restored to their normal condition, but should the train be prevented from entering the succeeding main section, the green lamp continues to glow, and the alarm gong to sound. For signaling in foggy weather a special fog signaling attachment is added to the train equipment by which the train is automatically stopped in each clearing section.

The system comprises

Department of Railway Telephones

This department is established as a permanent feature of TELEPHONE ENGINEER. The progress of the art of telephone train dispatching, its technical development, its news, and the elucidation of its mysteries for the non-technical worker will be found each month in these pages. The editors invite the problems and solicit the co-operation of the many readers of TELEPHONE ENGINEER in all parts of the world whose interests lie along these lines.

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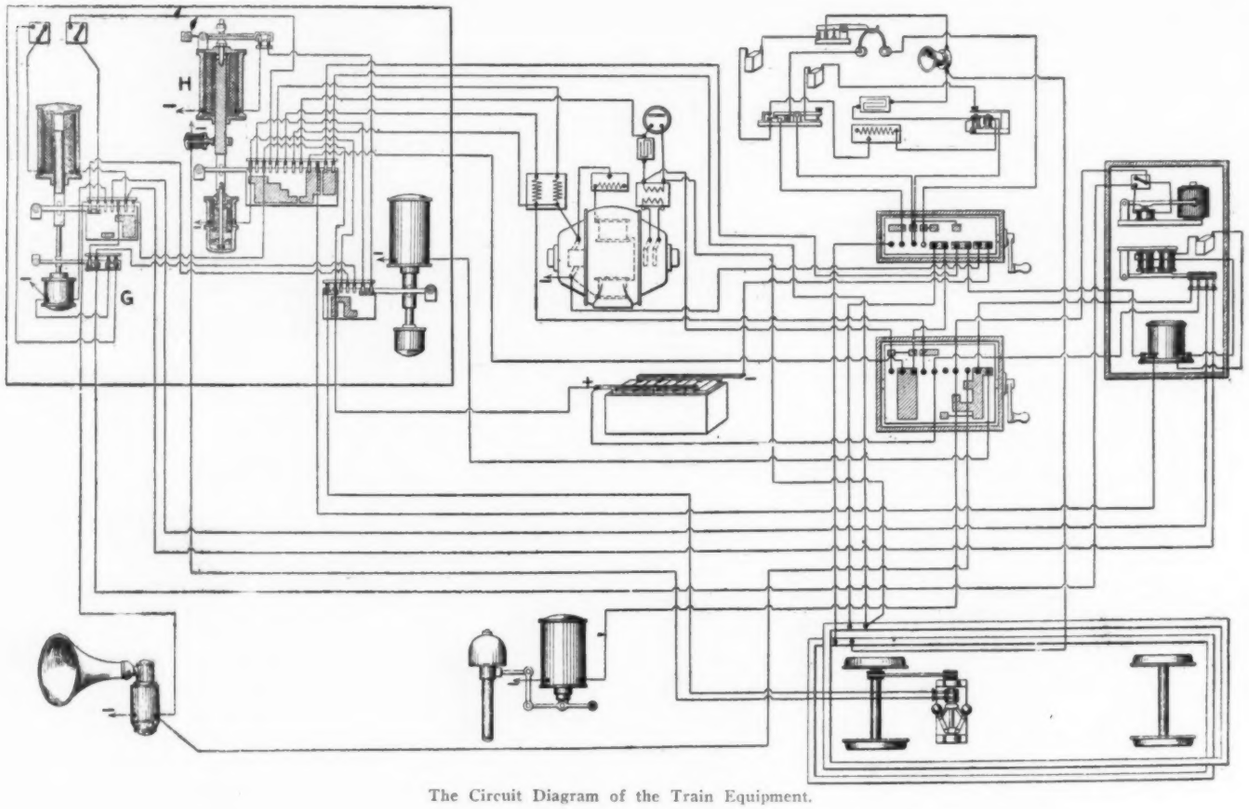


The Circuit Diagram of the Train Equipment.

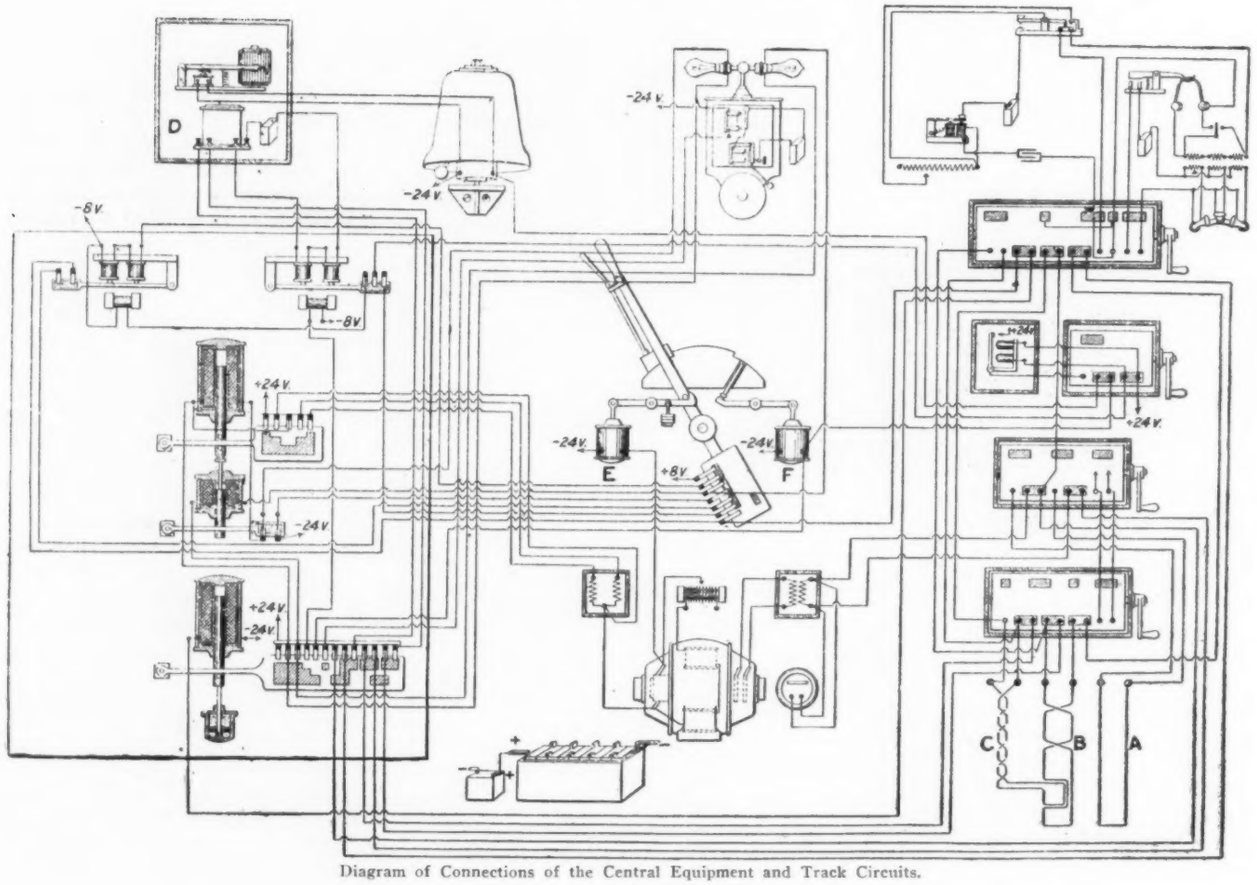


Diagram of Connections of the Central Equipment and Track Circuits.

five principal groups of apparatus: First, the stationary underground conductors; second, the movable circuits carried by one coach of each train; third, the tunable detector employed as a relay; fourth, the alternating current apparatus, telegraph and telephone instruments; fifth, the solenoids which automatically operate the alarm signals and controlling gear.

Something New in Portable Sets

"I rode in on a milk train the other day from one of the smaller towns outside of Chicago, on the ——— Line," said the man in the smoking car.

"An incident occurred on that trip which impressed

Kellogg Portable Set.

upon me strongly the rapid means of communication in railway service.

"We had gotten out about five miles from town and were rolling along nicely, when suddenly, after a series of jolts and jerks which brought everybody to their feet or knees, the train stopped.

The Inside.

"The window being open, I leaned out to see what we had struck. I saw the engineer and fireman climb down out of the cab and go forward to the front of the engine. The way they were prowling about and gesticulating, I could tell that something had broken down. By this time the conductor had joined them, and after a minute's consultation, I heard him yell to the brakeman to bring out the "portable." The brakie ducked inside, and in a minute appeared with a small square box and two or three poles about eight feet long, bound together. He joined the conductor beneath the telegraph wires, handed him the instrument, and unstrapping the poles, joined them together. Meantime the conductor had fastened the cord from the instrument to a cord at one end of the pole. This was all done in a few minutes' time. The brakeman then raised the pole to the wires above. In a second the connection was made and the conductor was talking to the dispatcher at the station twenty miles away.

"In less than a quarter of an hour an engine shot into sight.

"In a short time our engine was repaired and we were speeding on our way.

"Having traveled upon railroads a good many years, and having been tied up by storms, washouts, engine troubles, etc., for hours, I could not help but draw comparison between this modern, efficient, sure means of telephone communication from any point along the line, to the old, and more uncertain system of telegraph."

The demand for good railway telephone equipment is increasing, because of the directness and sureness with which communication can be handled. The Kellogg portable telephone shown here has a new feature attached which increases its value in railway service. It is the spool beneath the instrument proper. With this arrangement for winding up the cord, the set is made much more compact, and at the same time gives room for plenty of cord. These instruments are used exclusively

The Set in Operation.

on the Great Western Railway by linemen, trainmen and officials along the line, and are being permanently installed on many other railroads in the United States. The accompanying illustration shows a near view of this set in operation, showing also the connecting pole on the right, suspended on the wires.

Pupin Coils in Europe

Telephone lines loaded with Pupin coils are greatly in use in continental Europe; lines so loaded total more than 6,000 miles. The longest of such lines, overhead, reach 420 miles, from Berlin to Aix-la-Chappelle, and from Berlin to Frankfort, a distance of 350 miles. The line from Berlin in Germany to Milan in Italy, which is being constructed, will be still longer, measuring 840 miles. This line will later be extended to Rome and will then have a length of 1,200 miles. This is still below the longest loaded American line, which extends the 1,900 miles from New York to Denver. The underground cables and submarine cables loaded with Pupin coils are from Friedrichshafen to Romanshorn, seven miles; from Dover to Calais, twenty-four miles; from St. Margaret's Bay in England to La Anne in Belgium, fifty-three miles.

Railway Telephones in Austria

By Fred W. Scholz

THE application of the telephone to railway service, which has made such great strides within the last few years, was introduced in Austria as far back as the year 1879. Soon after the Bell telephone had become known in Europe, the Austrian state railways worked on a system to connect the round house and the railway station at Budapest by telephone. This met with such success that the years 1879-80 saw many experiments made with the telephone, culminating in a loud speaking telephone which was used on one of the most important railway lines of the empire. The telephones were used not only for station service but also for communication between switch tower man and station agent, which is the first instance of what we might call train dispatching by telephone.

In 1885 tests were made with the telephone in the six-mile-long Arlberg tunnel, as it was seen that the ordinary signaling by means of bells and other primitive means would not be sufficient. The only trouble lay with the moist air in the tunnel, and for a first start only a short experimental line was laid. After several months satisfactory service, in which it was found that the telephone instruments had suffered no injury, the line was extended throughout the tunnel. "Ader" microphones were used, and two receivers and transmitters, equipped with horseshoe magnets. The diaphragms in the instruments consisted of hard rubber; the terminals for the induction coil and the wires for the instruments were placed in a rubber protective case. In all of the instruments and accessories use of metal parts was restricted as much as possible and hard rubber was used wherever practicable instead of wood. The telephone sets for each tunnel station, consisting of two receivers and transmitters, a microphone and a small switchboard, were placed in cast iron boxes, closed with rubber insulated doors. The switch kept the telephones short circuited when the door of the box was closed, the microphone battery current being then interrupted. When the door was opened the current circuit was closed. The cables and wires were also laid in hard rubber cases. Every microphone battery within the tunnel consisted of four LeClanche cells, and the call current was supplied by 36 zinc-copper elements.

The moisture in the tunnel gave much trouble. The windings and coils had to be placed in tin shells to keep them in working condition. The metal parts of the telephones had to be replaced by hard rubber parts. In spite of all these precautions, the telephones still gave trouble, and finally it was decided to use new systems altogether. The iron cases were abolished and instead plain wooden boxes were used with the arrangement, however, of insulating the boxes from all contact with the moist walls or ground in the tunnel. The boxes stood on insulator bases and were protected against moisture from the walls by insulators. All terminals and wire connections were coated with paraffine, all wires placed on insulators, and the telephone cases and boxes used in the tunnel placed on porcelain feet.

Meanwhile the railway officials thought of introducing the telephone in railway service in general and in 1880 installed a complete telephone system along the most important lines. These telephone lines connected the various station agents with each other and with the main station or terminal, and in many cases replaced the telegraph. The various stations along the line could communicate with each other. Every station had a telephone box attached to the wall, having a strong horseshoe magnet, a receiver and transmitter, usually screwed to the table, a calling apparatus with relay, a calling key, and a lightning protective device. This line was placed in operation in 1882, and in 1885 this one line had 65 stations connected. After this time, all the new local interurban railway lines were equipped with telephones, dispensing with the telegraph entirely.

The North railway stations—Ostrau and Schönbrunn are especially noteworthy, as these show the first real case of train dispatching between stations. The station agent at the first station had to telephone the agent at the latter station when the trains passed his station. In 1898 the state railways instituted a compulsory block system which had to be installed by all lines, whether on the main or on the surburban roads. As many of the smaller roads found it too expensive to install the block system they petitioned for permission to use the telephone for train dispatching and announcing the passing of trains along the entire line. The petition was granted, and the introduction of telephones for train dispatching had a very rapid development. At first, however, telephone service was carried along the same wires used for the electric bell signals at crossings and it was only in 1906 that the government required all railway telephone lines to be separate and distinct from other service wires. The primary coils used for railway telephone service at present have 250 windings of 0.7 mm. silk spun copper wire of about 0.8 ohm resistance. The secondary coil has 4,000 windings of silk spun copper wire of 0.12 mm. diameter and 500 ohms resistance. For the iron core soft iron wires of 0.6 mm. diameter, coated with shellac are used. The receiving instruments have two spools each with 1,100 windings of 0.06 mm. silk spun copper wire of 250 ohms resistance. The magnet of the complete telephone must have a tractive force of two pounds. The primary coil has 270 windings of 0.8 mm. wire and 0.7 ohm resistance; the secondary coil has 3,900 windings of 0.25 mm. wire and 130 ohms resistance. The various stations have each two sets of telephones, used for two different directions of the railway line. The success of the telephone for communication in railway work was so great that the train rules issued in 1904 required the use of the telephone rather than the telegraph for train dispatching, call for special trains, etc., and the notification of railway accidents.

The use of train telephones is hardly known at this time. There are isolated cases where trains were equipped with train telephones, but these are mostly restricted to the special trains as those belonging to

the emperor and the court trains or president's private car. Several of the smaller lines, however, were the ones who first used the train telephone. The double cable containing the wires is laid parallel to the tracks, connects the locomotive driver with the special car or any other car required and allows communication while in motion. Two lines are used for the two directions of the tracks, and thus communication is excellent even in tunnels.

Some of the lines having telegraph wires began to use these for telephone service, and found that this plan was feasible and saved all the expense of a separate telephone line. The other alternative was to use the wires of the bell crossing signals for telephone operation, and this was done on many lines. The tendency was to use a simple switch system to change from the bell signal to the telephone, and for a long time one railway line used a simple switch to cut out the bell signal line and connect the telephone when it was needed. Another system wires the two in parallel, giving to the bell signals a resistance of 20 ohms, to the telephone instruments a resistance of 600 ohms, and thus assuring efficient service even if the telephones are connected while a signal is given by the bell. The only difficulty lay in the call to the telephone, which was finally accomplished by introducing a new bell signal for the telephone call. Then came the introduction of the condensers, which permitted simultaneous use of the line for both types of service.

A further step in the development is the introduction of portable telephones, which were carried by all the conductors on the trains of the Austrian railways as far back as 1900. A small case hung over the shoulder by a strap, contained the necessary outfit. A hollow bamboo rod with the wire within, and two clamp hooks on the end was used to connect to the telephone wires along the railway line. The first tests with such an apparatus were made in 1886, although at this time only for experimental purposes. But already in 1888, the Lemberg-Jassy line used the portable telephones for the track walkers, and that same year, during the spring freshets when a bridge had broken down, the portable telephone for some time was the only possible communication along that railway line, all other communication being cut off.

As extraordinary a train telephone service as can be found has been in use on the Mendel railway since the year 1903. This line is connected to a signal system which permits the locomotive driver to send bell signals to the different stations at a speed of four feet per second. This is a cable railway and the signals "halt," "help," "reverse," can be given from the locomotive cab. Every car has a telephone which is connected to the line by the simple opening of the telephone case. The connections are made along the aerial telephone wires running parallel to the tracks. A special sort of trolley runs from the locomotive cab to this line and allows communication. The return circuit is made through the car wheels to the rails. The same trolley or contact makes the telephone connections when the same is needed. The telephone sets consist of a receiver, a microphone, buzzer, calling key and a dry battery.

In addition to this historical account mention must be made of an induction phenomenon on the simultaneous telephone and telegraph lines on one of the lines. On the Laibach line there were 13 telegraph sets and 6 telephone sets in use. It was often noticed that in front of some of the telegraph relays almost entire conversations carried on over the wires could be understood. During the night this was especially common, and conversations were heard at the telegraph instruments as clear as could be expected at the best telephone instrument, provided the telegraph line was not used. No troublesome effect upon the telegraph service was noted at any time. It might be said that the telegraph instruments were in closed circuit, while the telephones were connected to the line by means of roller condensers.

Uses for Repeating Coils

By J. J. Graf, D. & L. W. R. R.

The adaptability of repeating coils is not as generally appreciated by railroad men as it deserves to be. The railroads present a greater field of usefulness for this class of apparatus than is obtained in the regular commercial telephone industry. They frequently permit the accomplishment of purposes which are otherwise solved by the building of special lines at considerable cost of material and labor.

On the Lackawanna system, thousands of dollars have been saved by simplexing and phantoming existing lines to produce other than telephone or telegraph lines. We cynchronise clocks located at points where the regular telegraph wires are not accessible, produce bell and signal circuits to govern and control switching and yard movements, or establish private signal circuits to an important point connected to an otherwise loaded circuit, or deliver ringing power to an isolated switchboard.

All of this work without the aid of the repeating coil would have required the construction of special wire circuits, which would in no way be more efficient or reliable than the simplex and phantom lines obtained from existing telephone circuits.

There are many telephone men who are under the impression that this class of apparatus as built for simplex and phantom work is too delicate and will be easily damaged by lightning and contact of lines with power or lighting service. This is not true. We are using a great many coils in a country that is hit hard by lightning and in circuits running through mining regions where our lines must associate intimately with very high voltage, and our loss has not exceeded two per cent. in over five years.

Cutting Off Extraneous Noises

An English patent on a method to prevent sounds entering the telephone transmitter from appreciably affecting the receiver at the same end of the line has been obtained by S. G. Brown of London, England, who is also the inventor of the Brown telephone relay. The inductive effect of the primary for current changes due to the transmitter is annulled by the use of a transmitter which is shunted with a high resistance coil arranged in opposition to the primary coil of the adjacent receiver, relay or primary of the transformer used in connection with it. With but little loss in efficiency, telephonic relays may be arranged to work in the middle of the line by connecting the primary of the receiving transformer in series with the secondary of the sending-on transformer and compensating the effect of the former on the latter by means of the compensation coil.

Simultaneous Telephony and Telegraphy

By R. T. Cloud*

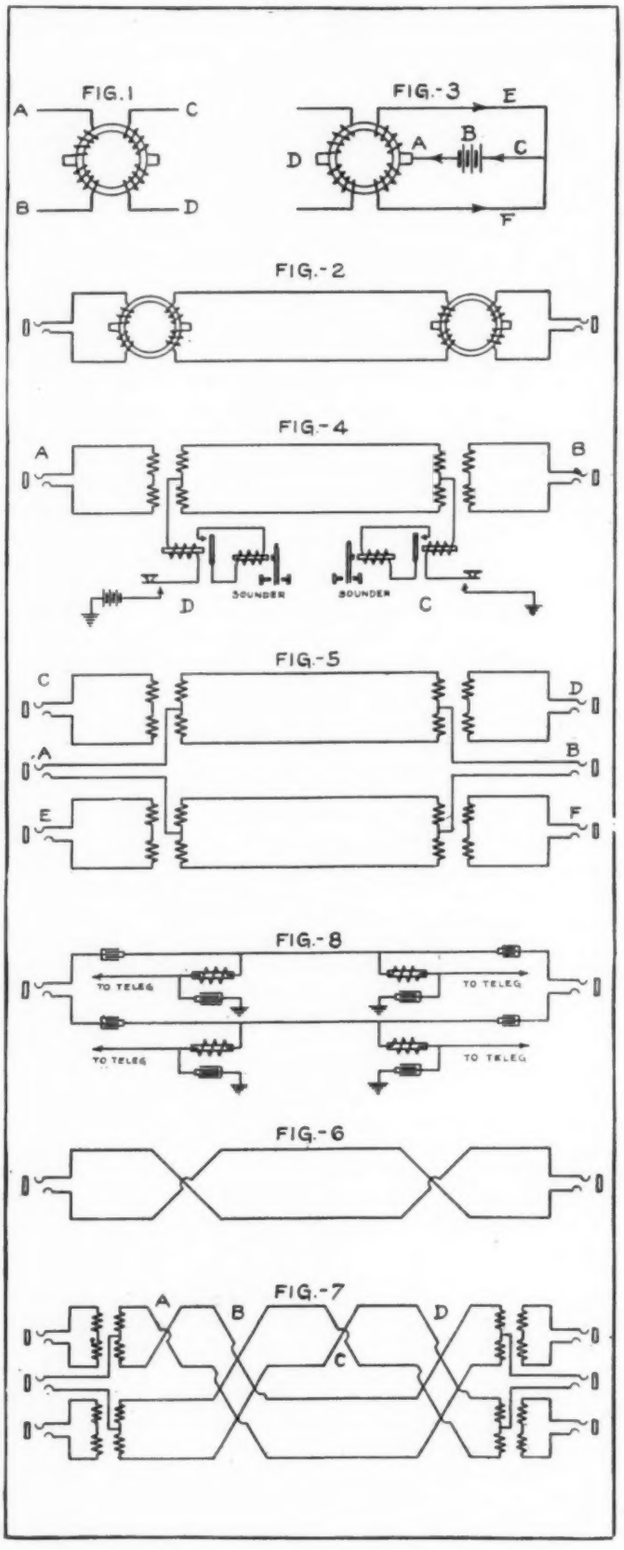
WHEN the comparatively recent performance of talking from New York to Denver, a distance of 2,010 miles, was made practicable, the Pupin loading coil was accredited with the glory of the achievement, and justly so, but it was its adaptation to the phantom circuit that made the performance possible, the loaded phantom being about fourteen per cent better than the loaded physical circuit. The principle of the phantom circuit, however, is not new and has been known and used by telephone companies for a number of years, as well as the composite telegraph circuit, which is closely related to it. Although there are comparatively few telephone men that are directly concerned with this phase of the work, it is thought that a discussion of the principles of simultaneous telephony and telegraphy will be of interest. Numerous railroads are now combining the telephone with the telegraph at practically little or no expense compared with the actual building of separate lines, and the advent of recent innovations in way of cheaper telegraphic communication by means of the night and day letter has made simultaneous telegraphic and telephonic operation an economic factor not to be overlooked.

The application of the principle of these circuits while simple, smacks somewhat of necromancy to the uninitiated, especially where coupled with such a term as a phantom circuit. However, such is not the case, and the circuits should be easily understood by anyone having any conception whatever regarding the action of electric currents.

To understand the principle of such circuits, the operation of the repeating coil must first be understood. A typical symbol drawing of the repeating coil is shown in Fig. 1. This coil essentially consists of two windings on one iron core, the core being in the form of a closed ring. A current flowing through either winding sets up lines of magnetism, commonly called lines of force, in the core of the coil; these lines of magnetic force being proportional to the current flowing through the winding. Any change in the quantity of the current flowing in one winding will therefore cause a consequent proportional change in the magnetic lines of force in the core. The fluctuations of the magnetic lines of force in the core sets up currents in the opposite coil, and these currents are proportional to the change of the magnetic lines of force in the core. It is to be noted that the secondary current set up in the second winding is caused by changes in the magnetic intensity, and consequently when the current flow in one winding is constant and does not change, there is no resultant current flow in the other winding; however, talking or ringing current, which is alternating in character and is in the state of constant change, is reproduced in either direction by the repeating coil. Fig. 2 shows a telephone line with a repeating coil at either end. Here an alternating current originating at one end is reproduced at the other end.

With an arrangement as shown at Fig. 3, current impressed on the coil *A* and flowing through the winding does not magnetize the core as the current divides and flows in two directions through the winding, and the

*Bell Telephone News.



magnetic tendencies oppose each other and are balanced; consequently there is no change in the magnetic lines of force due to this current, and no resultant current is set up in winding *D*. A change in a current flowing in winding *D* will, however, cause a proportional change in the magnetic lines of force in the core, which will in turn cause a proportional flow of current through the other winding and through branches *E* and *F*, but not through the battery circuit *ABC*.

This principle is used in the simplex telegraph circuit which is shown in Fig. 4. The core of the repeating coil is left out of the drawing for the sake of simplicity. With this arrangement telephone conversation can be held between *A* and *B* and at the same time telegrams transmitted between *C* and *D*, neither telegraph nor telephone interfering with the other. The telegraph current splits at the repeating coil, one-half going to each wire, so that in reality the two wires are used as one and the ground is used as the other side of the telegraph circuit. The talking currents, however, circulate, the current on one wire going in the opposite direction to that on the other.

By combining two of these circuits and substituting telephone for telegraph, we obtain an arrangement as shown in Fig. 5. With this arrangement two telephone circuits are used to obtain a third. The circuit *A* to *B* is known as a phantom circuit, and conversation can be held on this circuit, without interference, at the same time as the outside or physical circuits are in use. The phantom circuit is from fifteen to twenty per cent more efficient than the physical circuits on which it is built.

For the proper operation of a phantom circuit it is necessary that all four of the wires on which the circuit is built up be of the same resistance and that the insulation leakage be at a low point. Various methods have been used for balancing against unequal resistances and insulation leakages, but none has proven to have been very satisfactory, and to get good results all wires should be of the same material and size and the line should be in first class condition.

Prior to the advent of the phantom circuit cross talk and inductive noises on lines had been cared for by reversing the sides of the line at stated intervals in the manner shown by Fig. 6. These reversals are called transpositions, or physical transpositions in this particular instance. This arrangement when a sufficient number of transpositions are cut in their proper locations along the line prevents disturbances by presenting the two sides of the line alternately to the cause of the disturbance, thus neutralizing electrostatic and electromagnetic induction.

Again referring to Fig. 5, you will see that the phantom in reality uses the two sides of a physical line as one wire, and although transpositions may be cut in the physical circuits the phantom would still be susceptible to both electrostatic and electromagnetic disturbances. To overcome this both sides of one of the physicals on which the phantom is built are transposed with both sides of the other physical circuit. Fig. 7, *B* and *D* show phantom transpositions and *A* and *C* are physical transpositions.

There is another method of working telegraph on telephone lines, which is used more especially in large offices and is known as compositing. On composited lines both wires of the telephone circuit are not used as a single telegraph circuit, as in the case of the simplex method, but a separate telegraph circuit is worked on each side of the telephone line. The circuit arrangement of a composited telephone line is shown in Fig. 8. To prevent noise on the telephone line the telegraph is introduced through a retardation coil which smooths out the telegraph current so as to prevent any high frequency effects induced by the make and break of the telegraph current from disturbing the telephonic balance and a condenser is bridged to ground ahead of the retard coil so as to prevent static disturbances. The telegraph current is prevented from entering the telephone apparatus by condensers, which are cut in between the line and the central office equipment.

The ordinary low frequency ringing current would disturb the telegraph instruments of a composite set, causing them to chatter, so a special ringing apparatus has been devised for ringing on composite lines, the principle of which is that a high frequency current is used for signaling between stations. This high frequency current changes direction so rapidly that the comparatively sluggish telegraph instruments do not respond, but a howler or specially constructed relay at the far end of the line is actuated, and controls a signaling mechanism so that the operator is informed that some one is ringing on the telephone line.

This special ringing apparatus is also used with some phantom repeating coils designed for high talking efficiency, which makes ringing through them with the ordinary low frequency ringing current practically impossible.

The physical lines on which a phantom circuit is made up may also be composited and by working quadruplex telegraph on each leg it is possible for nineteen pairs, or a total of thirty-eight persons, to communicate with each other without any one pair interfering with another. With this arrangement there are thirty-two telegraph operators and six telephone users.

It is also possible to work telegraph on loaded circuits provided the telegraph current is limited to a low figure so as not to affect the loading coils.

The above is an outline of the principles of all the present commercial methods of simultaneous telephone and telegraph systems now in use, although the details may be varied slightly for different installations in actual service.

During the year 1911 Major George Owen Squier, of the United States Army, dedicated to the public a multiplex telephony system whereby a number of telephone messages might be sent over a pair of wires at the same time. In this system the telephonic fluctuations of current are impressed upon high frequency alternating currents, which are in themselves beyond the range of audibility, and the receiving ends are attuned to the various fundamental frequencies of these currents. The system as far as the writer can ascertain has never been used on commercial lines.

Kansas Commission News

The Public Utilities Commission on November 8 ordered that the application for restoration of service made by three subscribers of the Oskaloosa Telephone Company whose telephones were removed because they employed obscene and profane language when using them be denied until such time as the company becomes satisfied that the offense will not be repeated.

Telegraph Superintendents Meet in Chicago

November 20, 1912

A JOINT meeting of the eastern and western divisions of the Association of Superintendents of Telegraph was held in the offices of the Chicago & Northwestern Railroad Company, Jackson boulevard and Franklin street, Chicago, November 20, 1912.

The meeting was called to order at 10:30 a. m., E. A. Cheney, president of the western division, presiding. Mr. Cheney was elected to succeed himself as president for another term. His popularity was confirmed by this election, as it is his third term in this important position.

Mr. Cheney then announced the program for the day, which was to discuss any points about which any members were in doubt, or answer any questions that might arise in conjunction with the work of the organization or any member, and in the afternoon to make a trip to the plant of the Automatic Electric Company and visit the Chicago tunnel. Mr. Cheney asked Mr. Finley of the Automatic Electric Company, to outline the plans for the trip, after which a roll call was taken to determine the number who could participate in this part of the program. All but two of the members signified their intention of making the trip.

J. P. Church, superintendent of telegraph of the Wabash railroad, brought up the question of means of eliminating the noise incident to the operation of telegraph instruments in offices where telephone train dispatching equipment was installed.

L. M. Jones, superintendent of telegraph of the Sante Fe, stated that his road had been able to clear up troubles of this kind by mounting the transmitter arms on separate pedestals or on the wall, in place of on the table where the instruments were working, as they found most of this disturbance was due to mechanical vibration of the instruments and arm, rather than noise in the transmitter.

U. J. Fry, superintendent of telegraph of the Chicago, Milwaukee & St. Paul railroad, stated that his road had gone a step farther, and had arranged a separate contact in the transmitter key which opened the sounder circuits of the office when the transmitter key was depressed.

Mr. Fry further stated that he had been able to arrange for sending telegraph sounds over the telephone in cases where the dispatcher had occasion to use both telephone and telegraph in his work. This Mr. Fry considered advisable as he thought it a decided advantage to be able to notify other telephone operators that the dispatcher was busy, when he was using the telegraph, and it served to avoid confusion. This result was accomplished by mounting a transmitter button on the base of the telegraph relay, and connecting it through to the telephone circuit so that the mechanical jar of the armatures closing and opening produced an impulse over the telephone line, the operator reading the Morse direct through the telephone receiver. This was an interesting development and new to a number of the members.

E. C. Keenan, superintendent of telegraph of the New York Central lines west, raised a point on the handling of railroad telegrams by mail and several suggestions were made and different systems of handling this business were discussed.

F. T. Wilbur, superintendent of telegraph of the Illinois Central; G. A. Cellar, superintendent of telegraph of the Pennsylvania Lines west, and Mr. Jones of the Sante Fe, described the systems in force on their respective lines. No final decision as to the best method was arrived at, as the conditions to be met on the various railroads represented seemed each to demand special treatment.

Mr. Church then raised a question as to the advisability of using both Gill and Western Electric selectors on a telephone line when desired.

W. E. Harkens, General Railway Equipment Company; G. K. Heyer, Western Electric Company; J. H. Finley, Automatic Electric Company, and other associate members spoke on this subject, but J. J. Ross, superintendent of telegraph of the Michigan Central, summed up the situation by stating that anyone trying this scheme would multiply the chances of trouble, to which all seemed to agree.

Mr. Cellar then stated that he had something he would like to discuss in executive session and the open meeting was adjourned.

The afternoon session began at 2 p. m. Those making the trip, about 55 in all, met J. H. Finley, the representative of the Automatic Electric Company, in front of the Northwestern offices, and proceeded in taxicabs to the Automatic Electric Company's plant at the corner of Morgan and Van Buren streets, where they were received by Elsworth Keith, the manager of the company's supply sales department, and Mr. Rosenberg, the purchasing agent of the company.

A photograph of the group was then taken and they all proceeded to the office of Joseph Harris, president of the company, where an illustrated talk on automatic telephones and telephone circuits was given by A. B. Smith, the technical expert of the company. The points brought out most clearly by Prof. Smith were the simplicity of the apparatus and the wide margins of operation. The discussion was not a technical one, but brought out very clearly the high efficiency of the apparatus and its accessibility and the ease of maintenance.

Prof. Smith made the statement that over a quarter of a million automatic telephones of this company's make were now operating. These are distributed over almost the entire globe, there being automatic plants operating in 26 states of the Union. Thousands of lines are equipped in Great Britain, and boards in South America, New Zealand, Canada, Spain, Italy, Cuba and in all parts of the world.

The company was then divided into groups and under guides, provided from the engineering department, proceeded by different routes through the factory.

There was a considerable amount of surprise expressed by the guests at the size of the plant and the

scope of the business, as few of the visitors had before appreciated the extent to which the automatic idea had taken root in the minds of the public.

Among the things which elicited favorable comment was the cordless P. B. X. shown. This is made standard in 10 line capacity, but can be arranged for any desired number of lines. The automatic P. B. X. however, attracted more attention than any other feature, due to the novelty of the idea, as in the railroad field there seems to be an insistant demand for the use of this type of equipment, as every division headquarters, every main office, every railroad yards of any extent, all shops, and a thousand and one places could use twice the telephone service they do to good advantage if it were not for the expensive operation of the manual boards either owned or rented.

The new Automatic selector for train dispatching also received a good deal of favorable comment, as it appears to be a very simple and reliable piece of mechanism having all of the desirable features and being free from many of the margin lowering features of some. The fact that it has no adjustments to get out of order, ringing on open main line circuit and being extremely simple, appealed to all.

The Automatic Annunciator Company entertained the guests during the slight interim by sending music over their wires from a new species of Victrola located at a distance from the Auditorium, where the parties gathered when returning from their tour. Trains were announced and other announcements were made for the benefit of those present. There is no question that the annunciator is going to be a feature of the future in announcing trains, paging in hotels, and distributing music to subscribers of exchanges fortunate enough to avail themselves of this equipment.

At 4:15—fifteen minutes behind schedule according to Mr. Finley, the conductor of the party, the company again embarked on automobiles for the tunnel trip. By the courtesy of the tunnel company, this trip was as much of a success as was possible at the late hour at which the visitors arrived at that company's office. A trip of several miles under Chicago's streets was made and all members of the party expressed themselves as highly satisfied with the day as a whole.

At 5:15 the party broke up and returned to their hotels.

Of Interest to the Trade

By A. L. Haase

February Motor Truck Show in Chicago

The annual national exhibition of commercial motor vehicles will be held in Chicago from February 10 to 15, 1913, occupying the second week of the thirteenth annual National Automobile Show. The display will be larger and more diversified than ever, filling all of the floor space in the Coliseum building, Coliseum annex, and First Regiment armory.

Sixty-five motor truck and delivery wagon companies have contracted for space ,and there is a waiting list of belated applicants. If there should be as many of these as there were last winter between the first allotment in October and the opening of the show in February, the total number of complete vehicle exhibitors will be about ninety. Manufacturers have reserved larger spaces this year than last winter and will display more models. Most of them have extended their lines by adding new models of different load capacity, while some companies that heretofore have confined their attention exclusively to gasoline vehicles will exhibit new electric models and others that have produced only electric vehicles will show them side by side with gasoline trucks that they have brought out.

In all there will be on exhibition about two hundred and fifty different models of motor vehicles suited to every kind of industrial, commercial, municipal and federal purpose. So many of these are entirely new designs that they will embody the latest improvements in every detail whereby the efficiency, reliability, durability, accessibility and general ability of the power vehicle is increased.

There will also be displays of parts, equipment and supplies by nearly 200 accessory manufacturers.

The Chicago show is held under the auspices and support of the National Association of Automobile Manufacturers, organized in 1900, and having a membership of more than 100 of the most reputable motor car manufacturers of America.

The Deaf Made to Hear

In the "Telephone Scrap Book" on another page, two forms, one French and the other American, of devices for aiding the deaf to hear are described. Much progress has been made toward the perfection of this beneficent invention, and a splendid example of the finished, efficient article is shown in the Stromberg-Carlson "Deffone" and "Hear-a-phone."

According to the London *Daily Mirror,* there are at least 900,000 deaf people in the city of London alone. Statistics for this country are not immediately available, but it is safe to assume that the proportion is no larger in Great Britain than elsewhere. London's population of seven and one-half millions gives a ratio of one deaf person to every eight not so afflicted.

The light, convenient, unobtrusive device that so readily dispels the horrors of this malady is, therefore, one of the greatest possible boons to mankind. Its field is as broad as that of the telephone itself. And it redounds to the credit of the makers of this apparatus that they have set its price within the means of even the poor.

The "Deffone" increases the intensity—not the volume of sound—and carries it to the ear of the deaf person in a convenient manner. In other words, to employ a familiar electrical phrase, the object is to raise the voltage but not the amperage of the sound.

The ear is divided into three parts, outer, middle

and inner ear. The outer ear is a collector of sounds (it terminates in the drum); the middle ear is the hollow space containing the three bones that form a leverage to transmit sound from the drum to the inner ear; the middle ear is connected to the throat by the eustachian tube, which equalizes the air pressure on each side of the drum. The inner ear consists of the labyrinth, the canals, and the cochlea which are filled with a fluid and which contain the terminals of the auditory nerve. The nerve terminals project into the fluid. Now then, sounds enter the outer ear and set the drum in motion. This motion is transmitted through the little bones in the middle ear. The movement of this sets the liquid in the inner ear into vibration, and each nerve terminal picks up its proper sound, carrying it to the brain.

Deafness may be divided into two general classes, one in which the cause is some trouble with the receiving apparatus or the terminals of the auditory nerve, or the containing vessels of these nerves; the other in which the cause is some trouble with the apparatus that transmits the sound to the inner ear. Only about ten per cent. of the total number of deaf people are afflicted with the former trouble, which affects the receiving apparatus of the ear. There is no cure for this form of deafness. The "Deffone" is designed to aid those who are affected with the common cases of deafness which constitute trouble with the transmission apparatus, as, for example, perforated, relaxed or missing drum, stiffness of the little bones from catarrhal mucous working up from the throat through the eustachian tube and hardening at the joints of the little bones in the inner ear (the most common form of deafness), the stopping of the eustachian tube, and so forth.

Western Union Adopts Pension Plan

Referring to the pension plan adopted by the American Telephone and Telegraph Company for its own employees and those of the companies associated with it, the Western Union Telegraph Company announces that it has decided to take advantage of the opportunity which enables it to supersede the provisional pension plan announced by President Vail in March last as the first step in the effort to give expression to the company's appreciation of loyal and efficient service rendered by its employees, by a more comprehensive and liberal arrangement which will secure for the 30,000 employees of the Western Union Telegraph Company from January 1 the same benefits as those contemplated by the plan adopted by the telephone company.

The "Wireless" Cable Tester

The "Wireless" cable tester proved a success from the start, as there was an urgent demand for an instrument that would assist in locating trouble accurately yet simple enough so that it did not require an expert to use it. The method by which trouble is located with the device is very simple. It is a well known fact that a conductor carrying a current of electricity is surrounded by an electric field. In locating trouble a current is produced through the circuit from the source of current to the fault, and this circuit is traced by means of an exploring coil connected to a receiver. It is not necessary to trace every foot of the circuit. In practice the trouble man can cut the possible field of his trouble in half every time he climbs a pole and makes a test.

The Wireless cable tester is covered by patents and other applications are pending, but as an extra precaution the manufacturers have kept the circuit and wiring data a trade secret so far as possible. Changes and additions have been made in the tester from time to time as practice developed conditions that required it. One of the additions was a clock work interrupter connected in the line circuit; this was added because the cable sheath frequently carries current from other sources which produce a tone similar to that produced by the cable tester. The interrupter produces an unmistakable tone and at the same time raises the current to the highest possible point at each make and break.

The first Wireless cable tester was limited to the use of about six dry cells. Four is usually enough, but a shorter pair in the center of a large cable is very difficult to get a tone on, so a circuit has been added permitting the use of 20 volts, which produces a tone accordingly.

The device is manufactured by the Electric Specialty Manufacturing Company, Cedar Rapids, Iowa.

Book Reviews

Wireless Telegraphy and Wireless Telephony is the latest treatise on the subjects mentioned, credit for the well-presented work going to Charles G. Ashley, electrical engineer, and Charles B. Hayward, consulting engineer, both of Chicago.

Their colaboration on the compiling of data regarding the two mysterious agents was a fortunate one, as its result is a book which fulfills its mission, concisely and comprehensively, in 141 pages. The sense of the work is easily grasped by the average reader, the facts being set forth clearly and in detail. Frequent illustrations add to its value; they are well designed and apt.

From the early forms of wireless telegaphy to its present day importance, its growth is followed and its use in the aeroplane and dirigible shown. The ends served by wireless telephony, an agent ever more subtle than wireless telegraphy, is understandingly explained. Bell's radiophone, photophone, telephonic control of scillations, receiving arrangements, two-way transmission and systems of radiotelephony are among the subtopics covered in this section of the book.

Altogether, the work is one of the best on the double subject and is a decided acquisition to the literature of the American School of Correspondence.

Telephone Pioneers Meet Again

The second annual convention of the Telephone Pioneers of America was held at the Hotel Astor, New York, on November 14th and 15th. The attendance numbered more than 600 representatives from all over the states and the two days they spent at the convention were busy and interesting ones.

Vice-President Frank H. Bethell presided and an early move of the assemblage was the re-election of the present officers to serve for the ensuing year. They are: President, Theodore N. Vail; vice-presidents, F. H. Bethell, B. E. Sunny, W. T. Gentry, E. B. Field; secretary and treasurer, Henry W. Pope; executive committee, Thomas D. Lockwood, J. J. Carty, F. A. Houston, Thomas B. Doolittle, Charles R. Truex.

Vice-President W. T. Gentry presided at the first afternoon's session of business, which comprised addresses by Thomas A. Watson, who shared Alexander Graham Bell's early telephone experiments and who heard the first spoken word over the telephone; John J.

Carty, whose topic had to do with the future of the Association of Telephone Pioneers; U. N. Bethall, who reviewed the growth of the telephone and the advantage of allying the telephone and telegraph services; Emile Berliner, who told of the early days of telephone work; Samuel G. McMeen, who prophesied as to the further development of the telephone and interspersed his talk with humorous incidents, and lastly J. E. Kingsbury of London, a pioneer in Great Britain's telephone work.

In the evening a play written by Angus S. Hibbard and entitled, "Examinations; A Cataclysm in One Spasm," was presented, the cast and band being supplied by the New York Telephone and Western Electric companies. President Theodore N. Vail was present and shared in the pleasure which the entertainment gave the evening's guests.

The second day of the convention was spent in sight-seeing, and in the evening a banquet was held at the Astor, the attendance being more than eight hundred Pioneers and their ladies. The place cards were telegrams of greeting from President Vail and the favors were the gift of the Western Electric Company and were pocket lead pencils made from wire.

Chicago was named for the holding of the 1913 convention and San Francisco invited the Pioneers to that city for 1915.

New Type Mouthpiece Invented

A new telephone mouth-piece, thick and shallow, instead of thin-walled and bell-shaped, has been patented by S. S. Sonneborn, assistant general manager of the Electrose Manufacturing Company at Brooklyn, New York. The new mouth-piece, besides being practically unbreakable, has the advantage of not protruding and injuring lips and face. Its solid construction makes it economical and the style of its construction assures its sanitation. Being shallow with a gradually sloping surface, it is an easy matter to keep it free from dirt and its composition does not allow particles of dust to adhere to it to any noticeable degree. The device is made to fit any standard transmitter face plate and over it, transmission is both clear and strong its inventor claiming for it the retention of all the natural qualities of the human voice.

Contention Over Oklahoma Telephone Rates

A clash between the State of Oklahoma and the Pioneer Telephone Company will occur, it is said, if the latter attempts to collect rates for service in Oklahoma City higher than those authorized in a recent decision of the Supreme Court. Attorney General West, in a letter to State Auditor Leo Meyer, advised him that he should allow no claims for charges against the state for telephone service in excess of the old rate which was in force prior to June 1, 1909.

On the foregoing date the Pioneer Company raised rates in the city as follows: Individual business phones, $3.75 per month to $4.10; two-party business, $3.15 to $3.45; individual residence, $2.00 to $2.20; two-party residence, $1.80 to $2.00. A complaint was lodged with the Corporation Commission that this raise was put in effect without first securing the consent of the commission and that body attempted to impose a fine for contempt upon the company, which it appealed to the State Supreme Court. The court held that the company had no right to make the advance in rates without consent of the Corporation Commission and later a motion of the company for a rehearing was denied.

The attorney general now takes the position that the Pioneer Company must pay back to all subscribers in the city the amount of excess over the old rates paid since June 1, 1909, and, through Assistant Attorney General Moore, he has filed a petition with the Corporation Commission that the Pioneer Company be required to file a schedule of all subscribers in Oklahoma City with the amount of the excess charge paid by each and that the company be required to make good this amount. It is understood that in addition to informing state officers that they should not pay the advanced rates, the attorney general is preparing to notify individual subscribers in the city not to pay more than the rate in force prior to the raise.

If the telephone company does not take the case higher it can file an application with the Corporation Commission to approve the advanced rates and if the commission holds them to be just they will remain in force. The company, however, in its suit before the Supreme Court, denied the authority of the Corporation Commission to exercise any jurisdiction over rates in this city because rates were fixed in its franchise.

Court Upholds Contested Telephone Merger

The San Francisco telephone merger was upheld in a decision given by Superior Judge John F. Ellison. Judge Ellison came from Tehama county to preside in the suit brought by the city and county of San Francisco against the Pacific Telephone and Telegraph Company and the Home Telephone Company to set aside the conveyance of the Home Telephone system in San Francisco to the Pacific company. The decision sustains the demurrer of the defendant corporations to the city's complaint.

Judge Ellison held that the provision in the Home Telephone Company's franchise forbidding it to sell or transfer its property, or its rights and privileges under the franchise, is null and void. It was on this provision that the city's case depended. On this point Judge Ellison said:

> I find nothing in the provisions of the charter of the city and county of San Francisco that either expressly or by inference confers upon the city the power to place in the franchise the provision that the grantee thereof should not sell or dispose of its property. No law of the State conferred such power and the condition is clearly against the policy of the state, as expressed in its statutes granting to telephone companies the power to sell their property.
>
> If A should make a valid contract on good consideration with B that he would not sell his mercantile business to any one but B or with his consent, and A should, nothwithstanding said contract, sell his mercantile business to C, I apprehend no court would hold that B could follow the property into the possession of C and ask of the court that it retransfer the same to B. He might have some kind of an action against A, who had broken his contract, but the contract would certainly not follow the property in the hands of the vendee, or affect the validity of the sale.

Oklahoma Commission News

E. F. Bloom, of the Bell system, with headquarters at St. Louis, and J. E. Farnsworth of Dallas, vice-president and general manager for the Southwestern Telegraph and Telephone Company, were witnesses before the Oklahoma Corporation Commission in the Ada rate case. There is pending an application for reduction of the Ada rate from $2.50 to $2 for business telephones and from $1.50 to $1 for residence service. George E.

Player of the commission's telephone department testified the company was earning 15.3 per cent. under the present rates, and that the new schedule would award it 10.9 per cent. These figures were disputed by the Pioneer Company, which operates in Oklahoma, and witnesses testified that the reduction would not give a fair return for the service performed.

Attorney General West has filed a formal motion with the Corporation Commission to require the Pioneer Telephone Company to make an accounting of the charges collected in Oklahoma City under its increased rates made in 1909, which the Supreme Court recently declared illegal, and to pay it in to the commission for distribution to the subscribers. The company in its turn presented a request that the commission make a thorough investigation of the reasonableness of the rates charged in Oklahoma City before proceeding to enforce the order of the Supreme Court.

Police Telephone System in Cincinnati

An independent police telephone system, similar to that of the fire department, will likely be installed by the City of Cincinnati as the result of the increased bid for service under a new contract received by Safety Director Cash from the Cincinnati and Suburban Bell Telephone Company. The present ten-year contract will expire on January 1 and the company submitted a proposal for a renewal at an excess price of $3,000.

Safety Director Cash immediately requested Superintendent Riehl, of the Fire Alarm Telegraph Service, to submit plans and estimates for the installation of a system to be owned and operated by the city.

Mr. Riehl stated that the initial expense will be considerable, but that the city will profit by owning its own system in the end. Riehl in his estimate will include a system of flashlight signals by which the policeman on his beat can be reached by "headquarters" at any time during the night if wanted in a hurry. Under the present system if an officer on a beat is wanted he cannot be reached until he makes his regular calls.

Kentucky Commission News

At a meeting of the directors of the Fayette Home Telephone Company of Kentucky the contract by which the local plant of the Cumberland Telephone Company was taken over by the Home Company was approved, and if the State Railroad Commission gives its approval the consolidation will take place probably about the first of January. The directors called a meeting of the stockholders for December 3, at which a proposition to increase the capital stock of the local corporation from $400,000 to $700,000 or $800,000 will be considered, the capital to be obtained by the issue of extra stock to be used in the purchcase of the Cumberland plant.

The *Electrical World* prints a statement of Attorney General Wickersham to one of its representatives to the effect that he had notified counsel for the American Telephone and Telegraph Company that in his judgment certain of its policies and methods of doing business are in violation of the anti-trust law and that unless changes are made so as to conform its business with that law he would find it necessary to bring suit for dissolution under the Sherman act. According to "information obtained from reliable sources" Mr. Wickersham has had conferences with representatives of the company, and they have agreed to make the changes suggested. Therefore he regards it as unlikely that any necessity for bringing suit will arise.

The Clay Product Company, Chicago, is putting forth every effort to complete the construction of its new plant at Brazil, Ind., which is well under way. The destruction of the old plant by fire on September 21st, while regrettable, has afforded the company the opportunity to increase the capacity of the new works about 200 per cent. The company expects to be ready to manufacture the finest conduit and have it ready for distribution early in February.

The Telephone Improvement Company announces the opening of its new offices at 1343-1353 Monadnock building, Chicago, December 1. From these offices the sales and engineering work of the Automanual telephone system and the Telechronometer system will be carried out. The production of this equipment will take place at Galion, Ohio, where the North Electric Company has erected a new and strictly modern factory plant.

The Queen-Gray Company, J. G. Gray, president, has purchased the going business of Queen & Company, including the name, good will, patents, machinery, stock in trade and assets in general (except accounts receivable previous to October 15th), and will continue in the engineering, electrical and scientific instrument business at Philadephia.

A twenty-four page book has been built up by the Automatic Electric Company, Chicago, out of London (England) newspaper comments on the "experimental" automatic equipment recently installed in that city. The extracts seem to prove that the attitude of the British public toward the automatic is one of unqualified approval.

The Electric Storage Battery Company has just issued a bulletin entitled "Some Recent Developments in the Lead Battery for Electric Vehicles." It is free, and will interest all users of storage batteries, for whatever purpose.

Mathiàs Klein & Sons, Chicago, continue to send out interesting little cards and folders describing new Klein tools, or new uses for old ones. Construction men do not feel that they are keeping up to date unless they have the latest Klein circulars.

The Thompson-Levering Company, Philadelphia, publishes a series of bulletins describing its "Peerless" line of high-sensibility galvanometers, rail bond testers, testing sets, wheatstone bridges, etc. They give a great deal of information to those interested in these lines.

"Elapsed Time by Elimination" is the title of an interesting booklet published by the Calculagraph Company, New York. Its story is written by Henry Abbott, president of the company, and gives a good idea of how broad the Calculagraph idea really is.

The Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., is sending out a series of "Bargain News Bulletins" which should interest telephone men.

Brevities of the Business

PERSONAL NOTES.

John A. Kick has joined the sales department of the Western Electric Company at Chicago. He was formerly electrical engineer for the New York Central lines and is well known to the telephone trade through his excellent articles in the trade press.

W. J. Bradley and C. S. Ramage of Alturas, Cal., have bought the Alturas Telephone Company, including the long distance line between Alturas and Lakeview.

F. J. Chesterman, who succeeds Mr. Elias as division superintendent of plant, central division, came to the New York Telephone Company in 1907, and in 1908 was made division plant engineer, New York division, which position he held until his recent transfer.

E. K. Hall, legislative counsel of the New England Telephone & Telegraph Company, Boston, Mass., has been elected vice-president, to perform such duties as may be assigned to him by the president.

F. S. Spafard, assistant superintendent of telegraph of the Chicago, Rock Island and Pacific Railway, died in Chicago, October 27, of cancer. Mr. Spafard was born in 1853 and entered the railway service September 15, 1869. He served in various capacities on different western railroads and was superintendent of telegraph for the Burlington, Cedar Rapids, and Northern Railway at Cedar Rapids, Iowa, from June 1, 1893, to July 15, 1902. On the latter date he accepted the position of assistant superintendent of telegraph of the Chicago, Rock Island and Pacific Railway at Chicago, Ill., which position he held at the time of his death.

Joseph Miller, superintendent and manager of the Fountain Telephone Company at Covington, Ind., has been appointed superintendent of the Covington Electric Light & Water Works Company. Mr. Miller will assume his new position January 1, when the plant is to be taken over by the city.

A. B. Elias has resigned the position of division plant superintendent, central division, to become the general plant superintendent of the Southwestern Telegraph & Telephone Company, which operates in the state of Texas.

H. R. Gabay has been transferred from division commercial engineer, central division, to division plant engineer, New York division, succeeding Mr. Chesterman. He is a graduate of Cornell University, class of 1897, and his connection with the New York Telephone Company dates from March, 1898.

Benjamin S. Read, general manager of the Bell Telephone Company of Missouri, St. Louis, Mo., has been appointed general manager of the Missouri and Kansas Telephone Company, vice F. L. Gilman, resigned, and will henceforth fill the duties of both positions. Mr. Read's headquarters will continue in St. Louis.

J. J. Barry was appointed manager at Brockton for the Southern Massachusetts Telephone Company recently. Mr. Barry was promoted from the exchange at Clinton, where he has been conspicuously successful. Frank Feather, formerly of Manchester, N. H., and later of California, succeeds Mr. Barry as manager at Clinton.

Frederick F. Riefel will represent the Western Union Telegraph Company at Cleveland, O., in his new position, which is that of superintendent of telegraph of the Lake Shore and Michigan Southern Railway Company, the Lake Erie and Western Railroad Company, the Dunkirk, Allegheny Valley & Pittsburgh Railroad Company, the Toledo & Ohio Central Railway Company, and the Zanesville & Western Railway Company. He has been with the Lake Shore road about twenty years, starting as a messenger at Buffalo. He is a thorough railroad man and is well posted on the telegraph and the telephone.

Victor H. Stevens of Dubuque, Iowa, died October tenth. His death meant the passing of a pioneer independent telephone man.

W. H. Donovan is the new manager of the Interstate Telephone Company in Sandpoint, Wash. He comes from Spokane.

C. F. Roddy, of Atlanta, was made chief traveling auditor for both the Cumberland Telephone and Telegraph and Southern Bell Companies.

Lunsford Green, formerly assistant manager of the Cumberland Telephone and Telegraph Company at English, Ind., has succeeded R. E. Matthews as manager at Bedford, Ky. Mr. Matthews has resigned after several years' service with the company to go into other business.

F. L. Brown, after fourteen years of service with the Cleveland Telephone Company, resigned as chief commercial agent and will take up his residence in Los Angeles, Cal., on account of the ill health of his wife. Mr. Brown's first position with the Cleveland Telephone Company was that of contract salesman. Since then he has held various positions, which he filled in a very satisfactory manner. On January 1st of this year he was appointed chief commercial agent, which position will be filled by Mr. Brown's successor, J. D. Templeton, who was formerly commercial agent. His fellow employes in the commercial department showed their appreciation and regard for Mr. Brown by presenting him with a gold watch.

Gerald Deakin recently sailed for Europe, where he expects to reside for the next few years. While there he will take up the development of automatic telephone apparatus for the Bell Telephone Manufacturing Company, of Antwerp, Belgium. Mr. Deakin was formerly chief engineer of the Bay Cities Home Telephone Company, of San Francisco, and recently had charge of the automatic telephone plant of the Pacific Telephone & Telegraph Company.

Richard Cassidy, who has been with the Northwestern Telephone Company in Faribault, Minn., for the past two years, has gone to Mankato, where he has a position with the same company.

C. E. Lovell, manager at Sodus, N. Y., of the Wayne Telephone Company, severs his connection to enter a larger field near Syracuse. Reuben E. Merton, foreman under Mr. Lovell, will have charge of the company's interests here.

A. J. Walker, lessee of the Apopka telephone system at Apopka, Fla., has closed a deal with the Winter Garden exchange, whereby he has leased the lines there for a term of five years. Mr. Walker has made many necessary improvements to the Apopka system.

Harrison G. Follette of Avon, N. Y., has succeeded James S. Wilkin as manager of the New York Telephone exchange in Le Roy.

Philip L. Spalding of Philadelphia was given a farewell dinner at the Racquet Club by the officers and employes of the Bell Telephone Company. Mr. Spalding retired from the Bell Company of Pennsylvania, of which he was second vice-president and general manager, to become president of the New England Telephone and Telegraph Company, with headquarters at Boston. Before the dinner at the Racquet Club Mr. Spalding held a reception at the Bell Telephone building, 1230 Arch street. Between 4 and 5 o'clock more than a thousand women employes of the company shook hands, and from 5 until 7 o'clock, 3,000 of the men employes were greeted by the retiring official.

Charles Gourley, manager of the New York Telephone Company at Monmouth Junction, N. Y., was painfully, though not seriously, injured recently when he was thrown from his motorcycle while riding to New Brunswick.

Dr. I. H. Magill of Corning, Kan., has sold his Corning telephone exchange to Brice J. King of Centralia. The Corning exchange is the oldest in Nemaha county, and was started by Dr. Magill fourteen years ago. The price paid by Mr. King for the business was $12,000.

K. Ward Smith, formerly with the Cumberland Company at Nashville, Tenn., was made auditor of receipts for the combined Cumberland and Southern Bell Companies, with headquarters in Atlanta.

L. W. Stanton of 511 Putnam building, Davenport, Ia., while on a business trip to Chicago, early in November, paid a visit to the office of TELEPHONE ENGINEER.

A. S. Kelley has gone to Des Moines from Omaha and has taken up his new duties as division traffic superintendent in Iowa for the Iowa Telephone Company. He succeeds J. P. Mason. Mr. Kelley is a native of Red Oak, Iowa. He was educated at Ames and was manager of the telephone exchanges at Creston and Atlantic. Later he was transferred to the Nebraska Telephone Company at Omaha as traffic engineer and then became superintendent of traffic for the state of Nebraska, which position preceded his new appointment.

E. C. Bates, formerly contract manager of the Bell Telephone Company at Altoona, Pa., is promoted to the district managership, and immediately takes charge of the company's commercial work in the Pittsburg district, embracing the city and the McKeesport and Washington territory. Mr. Bates' experience in the telephone business has extended over a period of almost ten years.

J. P. Mason, who has been connected with the Des Moines offices of the Iowa Telephone Company for five years, is transferred to the staff of Thomas Cutler of Omaha, general traffic

superintendent. Mr. Mason has been traffic superintendent in Iowa for three years.

E. G. Mateer, district manager; H. W. Springer, plant supervisor; H. E. Prevost, local manager, and D. I. Swenk, representing the Altoona district of the Bell Telephone Company of Pennsylvania, were guests at a recent farewell dinner given at Harrisburg to J. Heron Crossman, Jr. The event was a gathering of those who served under Mr. Crossman when he was division manager of the organization. Mr. Crossman takes the place of Mr. Kinnard, who has been made general manager of the company, while the Harrisburg gentleman moves up to the one filled by Mr. Kinnard, general commercial superintendent. Mr. Mateer of Altoona and K. C. Raup of Williamsport, replied to the toast, "Reminiscences," as both gentlemen have recollection of the beginning of the old alphabetical company up to its merger with the present organization.

G. M. Hanisch, president; Will Doyle, vice-president; Charles Trippett, secretary, and Edward Jones, treasurer, were so named at a recent meeting by the stockholders of the Roseville Home Telephone Company, at Roseville (Placer county), Cal. C. McCracken was elected to the board of directors. Mr. Hanisch reports that the company is receiving all the new business it can possibly handle, and is constantly installing new telephones. At this meeting a stock dividend was declared.

M. J. Sanders and Walter Jones, officials of the Nebraska Telephone Company, have taken possession of the Holt County Telephone Company of O'Neill, Neb., in the name of the company they represent, which company bought the plant at O'Neill.

George S. Reinoehl, formerly manager of the Pittsburg district of the Central District and Printing Telegraph Company, operating the Bell telephone system, is promoted to be division manager at Harrisburg, filling the vacancy caused by the promotion of J. H. Crosman, Jr., to the general commercial superintendency, with headquarters in Philadelphia. Mr. Reinoehl has held the position of district manager in Pittsburg for about two years. He is a member of the Chamber of Commerce and vice-president of the Telephone Society of Pittsburg.

Thomas A. Compton, manager of the telephone exchange at Stuart, Neb., became a benedict in early November. His bride was Miss Helen M. Guthmann of Seward, Neb.

J. J. McTierman has been made auditor of disbursements and will have charge of the general accounting of the consolidated Cumberland Telephone and Telegraph Company and the Southern Bell Companies, at Atlanta, Ga.

Thomas A. Edison, Alexander Graham Bell, Theodore N. Vail and other men who have had a prominent part in the development of the telephone industry, were in attendance at the recent second annual meeting of the Telephone Pioneers of America at the Hotel Astor, New York City.

Charles A. Grant, assistant secretary of the Western Union Telephone & Telegraph Company, has been given a similar position with the American Telephone and Telegraph Company.

Charles Saumenig, head of the telegraph and telephone supply department of the West Shore Railroad, died November 10, in the Hackensack hospital. He was of a Baltimore family and was 60 years old. He was unmarried and made his home in Ridgefield Park, N. J.

J. H. Baker, formerly district manager of the Western Union Telegraph Company of the Harriman, Tenn., district, is now connected with the Nashville district office.

S. W. Headley, manager of the telephone company at Jackson, Minn., returned from his trip through Canada and Montana. Mr. Headley and his daughter Grace have filed claims near Miles City, Montana, and the Headley family expect to leave Jackson about the first of February for their new home. Mr. Headley has conducted the telephone busines in a creditable manner and it is regretted that he is to leave Jackson.

C. M. Henderson has been appointed local manager of the Fort Smith and Van Buren telephone exchanges at Arkansas. Mr. Henderson succeeds C. A. Vedder, who, for the last two years, has been local manager of the two exchanges mentioned above and has had commercial supervision of the Fort Smith territory. Mr. Vedder will now devote his entire time to the office of district commercial manager of the Fort Smith district. Mr. Vedder's office for the present will be located in the local telephone building at Ninth and A streets.

B. C. Boyle of Webster has been elected president; J. F. Drenguis of Scribner, vice-president; F. H. Fowler of North Bend, secretary, and C. L. Kelley of North Bend, treasurer of the Farmers' Telephone Company at Dodge, Neb.

J. C. Bosch, Le Roy Parker and C. J. Queen, officials of the United States Telephone Company of Columbus, Ohio, were entertained recently by the officials of the Citizens' Telephone Company at Grand Rapids, Mich. The Ohio company is a subsidiary of the Citizens' company and operates long distance lines in northern Ohio and southern Michigan.

C. E. Tarte, manager of the Citizens' Telephone Company of Grand Rapids, Mich., and W. S. Vivian, secretary of the Michigan Independent Telephone and Traffic Association, are members of a committee of nine appointed during the recent conference in Chicago of the independent telephone interests of the central western states to formulate a code governing the operation of long distance work for the central states.

M. F. Shea, president; Doles Ramsey, manager; W. H. Burroughs, secretary; A. Q. Holbert, treasurer, are the new officers of the New Hope Telephone Company at Concordia, Kas. The directors are: Charles Elliott, M. S. Decker, Will Johnson, J. P. Shea, D. Graham. There are more than 300 telephones on the system. Dave Sainden has charge of the Concordia office of the company.

Fred Spoeri, commercial manager of the Pacific Telephone & Telegraph Company, left Spokane to assume his new duties November 1 as commercial manager for the Bell company at Portland.

Joseph Baker of Prescott, Wis., has bought the Prescott telephone exchange from Herman Mercord and has taken possession. One of the first plans of the new management is to extend the line about ten miles.

E. P. Ripley of Mexia, Texas, has been appointed manager of the Southwestern telephone offices in Mexia and at Wortham.

Leonard H. Kinnard of Scranton, Pa., has been made second vice-president and general manager of the Bell Telephone Company of Pennsylvania, the Central District and Printing Telegraph Company, the Delaware and Atlantic Telegraph and Telephone Company, and the Diamond State Telephone Company, associated companies of the Bell. Mr. Kinnard began his telephone career in 1888 and knows it from the bottom up. He was general commercial superintendent until his promotion. J. H. Crosman, Jr., succeeded to Mr. Kinnard's place.

Thomas T. Cook, formerly of Harrisburg, Pa., has been appointed editor of the new publication to be issued by the Chesapeake and Potomac Telephone Company, whose main offices are in Baltimore. Mr. Cook has been an editor and special writer on the staff of the *Telephone News*, Philadelphia, for the past two years.

H. F. Anderson of San Francisco was appointed manager of the Home Telephone Company at a recent meeting of the directors. He succeeds John Holmes, who has been manager of the company for eight years and who is transferred to the office of General Commercial Manager P. H. Coolidge of San Francisco.

Capt. C. P. Vainman of Minneapolis, vice-president of the Northwestern Telephone Company, died in latter October at his hunting lodge near the village of Maine, Minn., which is not far from Fergus Falls. The deceased had general charge of the negotiations leading up to the adjustment of rates and the establishment of the new telephone system in Fergus Falls as well as Fargo, N. D. He purchased a hunting lodge in Otter Tail county, where he went every year to shoot. Death was due to heart trouble. The remains were taken to his home in Minneapolis.

A. H. Bastin of Lancaster, Ky., president of the Bastin Telephone Company, has sold his residence in Lexington avenue to Tobias Wiley of Paintsville for $7,500.

F. J. Perry, manager for the Cumberland Telephone and Telegraph Company at New Orleans, La., has been transferred to Crowley.

F. W. Yenson has been appointed general superintendent of traffic for the South Western Telephone Company, with headquarters at Dallas, Tex., succeeding H. T. McBride, assigned to special service.

John J. Carty, chief engineer of the American Telephone & Telegraph Company, New York City, has been made a member of the Order of the Sacred Treasure by the Emperor of Japan. The investiture with the insignia of the order and the presentation of a diploma for valuable service to Japan and her people have just taken place, the ceremony being conducted by Y. Numano, the consul-general. Mr. Carty already wears the decoration of the Order of the Rising Sun, conferred by the late emperor aftter the close of the war between Japan and Russia.

"Jack" Kincaid, for several years district manager of the Mountain States Telephone Company, has been promoted to the Pocatello, Idaho, district. Mr. Kincaid's strict attention to the wants of the public and his exceptional courtesy have endeared him to all with whom he came in contact. His successor is J. A. Seeley, an experienced telephone man, and the same degree of success is bespoken for him as that achieved by Mr. Kincaid in the past.

N. C. Kingsbury, vice president of the American Telephone

and Telegraph Company, on his recent visit to Atlanta, Ga., was the honor guest at a dinner given at the Capital City club by President W. T. Gentry, of the Southern Bell Telephone and Telegraph Company.

F. Mawhinney, president; R. A. Cabeen, secretary; W. N. Dewhurst, treasurer, were the new officers named at a meeting of the directors of the North Telephone Company, at Harrisburg, Pa.

J. W. C. Houston of Owensboro, Ky., formerly manager of the Central Telephone Company there, has been appointed manager for the Inter-State Telephone Company at Sterling, Ill., succeeding E. B. Marmduke. The appointment was made known by Manager Griffiths of Aurora.

H. L. Norton has been appointed by the Michigan State Telephone Company to the position of manager of the exchange at Easton Rapids, Mich., to fill the vacancy caused by the death of George D. Rushton Mr. Norton received his first training in the telephone business in the exchange in which he is now to be the manager.

T. F. Crocker, who for the last four years has served as general superintendent of the Home Telephone Company, Dayton, O., has tendered his resignation to the company. He has gone to Beaver Falls, Pa., where he will take up the managership of the Beaver County Telephone Company, operating the automatic system.

John Detchon of New Richmond has bought the Sumner and Wright telephone system at Waynetown, Ind., and has also acquired the Wright system at Hillsboro. Detchon owns the telephone plant at New Richmond.

John Knepper has been appointed manager of the telephone company at Buffalo, Wyo., to take the place of A. E. Madden who recently resigned and moved to Sheridan.

R. A. Folsom, who has had charge of the automatic switchboard for the last two years with the Home Telephone Company, succeeds T. J. Crocker as general superintendent. Mr. Folsom formerly had charge of the Columbus branch and is capable of filling the position made vacant by Mr. Crocker.

E. L. Miller, commercial manager of the Pacific Telephone and Telegraph Company at Santa Barbara, has tendered his resignation on account of poor health. He has been succeeded by Herbert H. Calvin, formerly of the general commercial office in San Francisco.

Marshall B. Downing, district manager of the New York Telephone Company at Newark, N. J., has accepted a position as superintendent of traffic of the Missouri Bell Telephone Company at St. Louis. J. W. Hubbell, Brooklyn, N. Y., has been appointed to succeed him.

C. E. Kiefer, for the last two years contract agent for the Pacific Telephone and Telegraph Company, has been appointed commercial manager of the Spokane office to succeed Fred Spoeri. Mr. Kiefer came to Spokane two years ago from Pittsburgh, Pa.

E. R. Harding, vice-president of the Holtzer-Cabot Electric Company, is making a business trip to Brookline, Mass., stopping, en route, at Indianapolis, Detroit and other eastern points.

Frank W. Pardee, general manager of the L. M. Ericsson Telephone Manufacturing Company, Buffalo, New York, paid a welcome visit to the office of TELEGRAPH ENGINEER, recently.

Harry Abbott, president of the Calculagraph Company of New York, dropped in, a few days ago, to say "Hello" to the editors of TELEPHONE ENGINEER.

NEW TELEPHONE COMPANIES.

ARLINGTON, WASH.—The South Fork Telephone Company has been organized and will install a system to serve this territory.

BUFFALO, S. D.—A company has been organized to construct a telephone line from Buffalo to Camp Crook. A connection with the Belle Fourche line will be made at Camp Crook. Officers of the company are: President, L. A. deBelloy, Camp Crook; vice-president, C. T. Martin; secretary, Fred Wilson; treasurer, William Fried. The company has a capital of $5,000.

BUNCETON, MO.—Bunceton Independent Telephone Company, capital, $5,000. Incorporators—J. G. Powers, E. P. Harned, O. N. Dille and S. H. Groves.

CLEVELAND, O.—The Metropolitan Telephone & Telegraph Company, of Cleveland, capitalized at $10,000, filed articles of incorporation with the secretary of state at Columbus. Headquarters of the company is in the New England building. It is said the company will seek a franchise in Cleveland. A new sixteen-copper line from New York to Chicago is promised. Twenty-five miles of poles have been set near Bowling Green, O.

DES MOINES, IA.—The Automatic Telephone Company has been organized with a capital of $1,000,000 to install an automatic exchange here. L. W. Stanton of Davenport and O. C. Shultz of Madison, Wis., are interested.

GLENDALE, O.—Farmers' Telephone Company, of Glendale; capital, $500; incorporators, B. F. Craddock, S. S. Simmons, E. A. Smith and George Chenault.

GRAND VALLEY, PA.—The Warren County Telephone and Telegraph Company, of Grand Valley, chartered with a capital of $5,000. It will do a purely local business between Warren county towns.

GREEN SPRING, VA.—Watauga and Green Springs Telephone Company (Inc.), Green Spring, Va. Capital: Maximum, $5,000; minimum, $1,000. W. T. McConnell, president; Guy McConnell, secretary; J. D. McChesney, vice-president—all of Abingdon, Va.

JACKSONVILLE, FLA.—The Home Telephone Company has received its charter from Tallahassee, and the same has been filed for record in the office of the clerk of the circuit court, the company to build and operate the automatic telephone exchange, the franchise for which the people voted to the company at a recent special election that was held. The company is capitalized at $1,323,000, there being 132,500 shares of stock of a par value of $100 each, the term that the corporation shall exist to be perpetual. The length of the line shall be made or is intended to be made about 1,000 miles. The highest amount of indebtedness or liability shall be $3,000,000. The officers of the Home Telephone Company are: Charles Blum, president; John J. Ahern, vice president; A. S. Matzner, secretary and J. W. Ingram, treasurer. Secretary Matzner holds 10,000 and Treasurer Ingram 5,000 shares of stock, the other officers holding 100 shares of stock each. One hundred shares of stock are also held each by John G. McGiffin, J. C. Halsema, A. Reed Warrock, A. M. Endel, J. S. Maxwell, D. A. Morrison, Jr., John A. Cunningham, L. G. Hirth and John W. Dodge, all of whom, together with the officers, form the board of directors.

KELIHER, MINN.—The Keliher Telephone Company has been incorporated with a capital stock of $15,000.

KONAWA, OKLA.—East Fairview Telephone Company has been incorporated with a capital stock of $500. The incorporators are G. W. Hager, R. W. Mann, Ed. Greer, all of Konawa.

LEEDY, OKLA.—Leedy Mutual Telephone Company has been incorporated with a capital stock of $3,000. The incorporators are W. S. Fred, C. H. Lathrop and R. E. Ishmael, all of Leedy.

LOCKPORT, N. Y.—Incorporation papers were filed at the county clerk's office by the Sanborn Home Telephone Company. The capital stock is $7,500. The directors are R. E. Casselmain, Frank R. Stover, B. L. Hudson, A. L. Pearce, Ross N. Hudson, W. E. Raymond and J. B. Hudson, all of Sanborn. The company will erect an independent line in Sanborn to connect with the Niagara County Home Telephone Company.

LYND, MINN.—Lynd Farmers' Telephone Company, Lynd. Capital, $5,000. Incorporators: William Banks, F. W. Vanstrom and others.

MANGUM, OKLA.—Consolidated Independent Telephone Company has been incorporated with a capital of $5,000. The incorporators are D. H. Wright, T. P. Clay and J. H. Hartman, all of Mangum.

MANVEL, TEXAS.—Suburban Gardens Telephone Company of Manvel, Brazoria county, capital stock $10,000. Incorporators, T. E. Scott, W. B. Scott of Manvel, W. R. Allison of Houston.

MILTON, WIS.—Milton Farmers Telephone Company, Milton; capital, $3,000; incorporators, A. O. Leary and six others.

NAPLES, S. D.—The farmers living in this vicinity have taken steps to organize a stock company and install a rural telephone line.

NASHVILLE, TENN.—Dicus Home Telephone Company, Jackson county; capital $1,500; incorporators, J. A. Carver, S. H. Carver, H. C. Clark, H. T. Tate and J. L. McCarver.

NEW YORK, N. Y.—John H. Smith and William F. C. Kloepfer, of the Oetecta Phone Company, of New York City. Capital, $250,000.

POLO, ILL.—Representatives of the Mutual telephone companies of the county met in this city recently and transacted business for the success of the different companies as a whole. It was decided to form a new organization to be known as the Carroll County Mutual Telephone. Officers were chosen as follows: J. R. Wolf, president; C. C. Thill, vice-president; Boyd Zuck, secretary.

RAY, N. D.—Williams County Mutual Telephone Company, Ray, Williams county, capital stock, $10,000. Incorporators, H. A. Helson Philip K. Everson and Rudolph Hoel, all of Ray, N. D. Filed October 15.

ROCHESTER, N. Y.—The American Telephone Fire Alarm Company of Rochester was incorporated at Albany recently with a capital of $5,000,000 to manufacture all kinds of fire alarm and auxiliaries to fire alarm, telephone and telegraph apparatus,

fire detection and fire extinguishing apparatus, and to install fire alarm, burglar and watch service systems. The directors are David G. Dee and Burt B. Clark, Rochester; William S. Haring, Fred H. Smith, William M. Coup, Victor J. Van Slyke and John Erikson, Chicago.

SLATER, WASH.—A new telephone company is being organized to construct a line between Burbank and Slater. Mr. Stewart is the promoter.

SPRING GROVE, VA.—The James River Telephone Company has been incorporated with O. J. Schuster, president, and A. H. Oschner, Chicago, Ill., secretary and treasurer.

TOWER CITY, N. D.—A charter has been granted by the secretary of state to the Northern Rural Telephone Company of Tower City. The incorporators are Geo. O. Goulet, Herbert L. Taylor, W. O. Clark, Daniel Miller and W. C. Gray. The capital stock is set at $6,000.

TRINIDAD, COLO.—An independent telephone line is soon to connect Trinchera with Trinidad. It is expected that the line will be in operation in early December. Articles of incorporation have been filed with the names of James E. Shearer, P. N. Pattison, and W. M. Hudson as incorporators. The capital stock is given as $5,000, divided into 500 shares of $10 each. Back of the project is James E. Shearer, a prominent ranchman of Trinchera, who it is understood is putting up most of the capital. It will in no sense be in competition with the Mountain States Company, and while owned by individuals will afford all the connections of the local exchange.

VIRGINIA, MINN.—The Range Telephone Company is the name of a new organization which proposes to have a system of independent lines with headquarters in Virginia. The capital stock is fixed at $300,000. The following well-known men are the incorporators: C. E. Hendrick, A. C. Osborn, P. R. Vail, H. O. Johnson, Mark Elliott, Adelbert Trottier, C. H. Rogers, W. B. Shaver, Andrew Grande, all of Virginia; Thomas Flannigan of Gilbert; J. S. Lutes and F. S. Colvin of Biwabik; George W. Robinson, vice-president and treasurer of the Tri-State Telephone Company; A. J. McCulloch, general manager of the Zenith Telephone Company and J. C. Crowley, Jr., of Superior.

WILSON CREEK.—J. C. Oaks has been elected president; Donald Urquart, vice-president and W. R. McDowell, treasurer of a company organized to install a telephone system. A line will be built to connect with the farmers' line to Ephrata and with the Quincy independent line.

RATES.

SACRAMENTO, CAL.—In the hope of getting a big reduction in the cost of telephone service to the city, Commissioner Wilder has asked the telephone company to submit him an estimate on the expense of installing in the city hall a switchboard capable of handling all city telephones, including the schools, with twenty-four-hour service. At the present time the city is compelled to pay $3.50 per month for each telephone in city schools.

BALTIMORE, MD.—The methods by which the Chesapeake and Potomac Telephone Company divides its subscribers into city and suburban classes are approved by the Public Service Commission. The commission gives its approval to the charge of $3 a year, which is made of suburban subscribers who wish to have their names enrolled in the city lists. The commission orders that the telephone number must be given in this city list, instead of merely stating "see surburban." If necessary the words "toll service" may be added as a guide to persons not familiar with the rates. The commission declares that if every surburban subscriber were allowed to have his name in the city list the list would be overburdened and that confusion as to rates would easily follow. The commission declines to make any changes in the rates of rebate it pays to owners or occupants of property where public pay stations are located, and the petition for a reduction of rates between one suburban station and another is also denied.

LITTLE ROCK, ARK.—Efforts upon the parts of representatives of the Southwestern Telegraph and Telephone Company to secure the consent of local subscribers to an increase in telephone rentals in return for improved service, were rejected. Resolutions were adopted declaring the present schedule of rates sufficiently high to justify an improved service and requesting all citizens not to sign an agreement for an increased rate.

DES MOINES, IOWA.—The city council passed a resolution presented by Mayor James R. Hanna, providing for a special tax of $1 per year for every post maintained by the Des Moines, Ia., company and $1 per mile for all underground wire of the Iowa Telephone Company. The resolution further provided for the regulation of telephone rates in the city, so far as the city has power to exercise control. By way of privilege to do business in Des Moines, the city will claim one free telephone for each 1,000 population, or about ninety free telephones at the present time.

BROWNWOOD, TEX.—The West Texas Telephone Company of Brownwood has purchased the Brady telephone exchange and about fifty miles of toll lines. The toll lines include the ones to Menard, Eden and San Saba.

CAMDEN, DEL.—The Bell Telephone Company has laid a cable 4,000 feet long from Walnut street wharf to Market street. The tug Gladys, with a barge containing the cable, worked from the Pennsylvania shore across the Delaware river to Camden with the cable, which was dropped to the bottom of the Delaware river in such localities that it will not be dragged into by coasting craft.

MUSKEGON, MICH.—The Citizens Telephone Company will put in three more toll lines between this city and Grand Rapids and will greatly improve the other lines. Phantom circuits will be put in this fall. To install these the present wires will have to be carefully gone over and all grounds eradicated.

PORTLAND, ORE.—Attorneys for the Home Telephone and Telegraph Company were successful in their efforts before Circuit Judge McGinn to secure the dissolution of the temporary injunction granted by Judge Gantenbein restraining the ousting of the Bell telephones from the Multnomah hotel in favor of the automatic or Home telephones. The judge held that the question was one which should be tried out on its merits.

SCHENECTADY, N. Y.—The telephone merger will take place, it is said on reliable authority, about October 19, when it is hoped that all the switchboards in the local offices will be installed so that an up-to-date exchange can furnish rapid connection between the two parties. Installation of new equipment is being made as rapidly as possible and it is expected that this will be complete in another month.

FRESNO, CAL.—The differences between the Fresno school department and the Pacific Telephone and Telegraph Company, regarding telephone service in the schools were amicably adjusted at a conference between H. E. Patterson, local manager of the company and C. L. McLane, city superintendent of schools. The school department will have single party lines, but will pay $3 a month, or the old two-party rate. The regular charge for single-party lines is $5 a month.

DOUGLAS, ARIZ.—Five hundred desk and wall telephone instruments are being installed in Douglas for the local office of the Mountain States Telephone and Telegraph Company.

ALBANY, N. Y.—With their organization characterized by John H. Dugan as "a disgrace to the city of Albany," the members of the Chamber of Commerce, at a public meeting in the court room of the city hall adopted a motion that the proposition of the New York Telephone Company with regard to the reduction of its rates be accepted and the prosecution of the matter before the public service commission be put off until May 1.

ALLEGAN, MICH.—The telephone war, which has been going on several weeks, has been settled for two years at least. C. E. Tarte of Grand Rapids, general manager of the Citizens' Telephone Company, after a conference with the Board of Trade committee announced that rates in Allegan for the next two years will be $21 a year for business, $18 for residence and $15 for party line telephones, this being a compromise schedule.

DENVER, COLO.—Since the recent political shaking up in Denver certain business interests in that city have begun a movement in favor of a telephone ordinance establishing lower rates for the telephone users in Denver. At the same time it is their desire to compel the Mountain States Telephone Company to submit to a physical valuation of its plant so that figures may be obtained upon which to base a permanent ordinance. The proposed ordinance, which is intended only to be temporary until investigation can be made, establishes a flat rate of $7 a month for business telephones.

DES MOINES, IA.—At a conference between the executive board of the Commercial Club and the Iowa Telephone Company, the matter of rates was practically adjusted. The meeting was attended by Mayor Hanna for the city and E. H. Conger, manager of the telephone company.

GLOBE, ARIZ.—The telephone toll rates from Globe to Miami and from Miami to Globe have been reduced. A new exchange has been installed in the office of the Miami Townsite Company connecting with all subscribers, thus insuring direct service between the telephone users of the two towns. The old rate was 5 cents a minute for subscribers and a minimum of 15 cents for three minutes for non-subscribers. The new rate is 10 cents for three minutes and 5 cents for each additional minute over three.

HEMPSTEAD, L. I.—The New York Public Service Commission, second district, has received a complaint from the United Holding Company, operating at Bellerose, town of Hempstead,

L. I., directed against the New York Telephone Company, asking the commission to reduce the rate from Bellerose to Manhattan and Brooklyn 5 cents a message and that the Long Island toll service to Manhattan and Brooklyn be improved. The telephone charge to Manhattan is 20 cents for subscribers and 25 cents in public booths. The property across Jericho turnpike in the borough of Queens, less than 100 feet distant, gets the same service for 5 cents less.

MEMPHIS, TENN.—Until a new restraining order enjoining the city from enforcing its rate ordinance is granted by the United States Circuit Court of Appeals at Cincinnati, no collections on local telephone rentals will be made by the Cumberland Telephone and Telegraph Company.

ROANOKE, N. C.—Before the State Corporation Commission the Virginia-Tennessee Telephone Company presented its petition asking to be permitted to increase its telephone rental rates for the city of Roanoke, N. C.

SAN FRANCISCO, CAL.—That the Pacific Telephone and Telegraph Company should lower its rates in San Francisco was the opinion expressed by the board of supervisors at a recent meeting held to consider that subject. Chairman Hilmer of the board promises that there will be a considerable reduction of the rates next year and explains that the failure to accomplish it earlier was due to the fact that the board did not have time to make an adequate investigation. The charter provides that the rates shall be fixed in February.

TRENTON, N. J.—Telephone rates in and around Trenton will be advanced by the Delaware and Atlantic Telegraph and Telephone Company. District Manager C. R. Fairchild declined to make any statement as to the extent of the intended increase.

CONSTRUCTION NEWS.

INTERNATIONAL FALLS, MINN.—A line to Blackduck is being built by the International Falls Telephone Company and a branch line is also to be built along the Backus Railroad extension south of Little Fork.

KLAMATH FALLS, ORE.—Work of installing a central energy telephone system in Klamath Falls has been commenced by the Pacific Telephone and Telegraph Company. When the new system is completed, much of the wiring along the business streets will be carried in cables instead of a big network of wires on crossarms. The telephone exchange, as soon as the system is finished, will be located in a new brick building on Seventh street near Main.

KNOXVILLE, TENN.—Within the next few months Knoxville will have telephone service second to that of no city in the south, and superior to the systems in many cities elsewhere in the country. Recently the People's Telephone and Telegraph Company, the so-called independent company here, completed the transformation of its plant to the "common battery" system. Coincident with this work, the Cumberland Telephone and Telegraph Company, or the so-called Bell system, is making improvements.

LASALLE, ILL.—The Central Union Telephone Company has started the use of concrete poles for its long distance service. One of the first lines to be built, using concrete poles, will be from LaSalle to the eastern line of the county. Work of construction will begin at LaSalle and continue eastward. The headquarters will be maintained at LaSalle until the poles are in place as far west as the county farm, when the crew will move to Ottawa.

LITTLE ROCK, ARK.—Owing to the rapid growth of the city of Little Rock and consequently the large increase in the number of telephones in use, the equipment in the main exchange of the Southwestern Telegraph and Telephone Company is about exhausted and it has been found necessary to make at once a considerable addition to building and local plant. The change will cost $150,000.

LISBON, N. D.—The Independent Telephone Company is building an exchange in the city of Lisbon that will be finished in a few weeks.

LLANO, TEXAS.—The Southwestern Telephone Company strung a copper circuit from Austin to Llano.

MOUNT PLEASANT, IA.—The Mount Pleasant Telephone Company will begin at once the erection of a new two-story brick building which will house its offices and operating rooms. It is planned to have the building completed sufficiently before colder weather sets in so that the interior may be finished this winter.

NAMPA, IDAHO.—Construction Foreman Arthur Clark, with a force of men, has returned from a two weeks' trip along the toll lines from here to Silver City and from Silver City to Jordan Valley. Many improvements were made on the line, which was generally put in shape to withstand a severe winter in the mountains of Owyhee. The snow storms of that section are so severe that it is difficult to keep the wires up, but this winter no trouble whatever is expected, as the line has been placed in better shape than it has ever been before.

NELSON, B. C.—The federal government will build a telephone line between Nelson and Waneta, which will give direct communication with a rich mining and agricultural section, according to an announcement made at a recent meeting of the board of trade. The mines at Sheep Creek, Ymir and Erie and ranchers at Fruitvale, Sayward and Pend Oreille valley will receive chief benefits.

NYSSA, ORE.—The Malheaur Home Telephone Company will do extensive reconstruction work on its lines in this town and vicinity.

OWOSSO, MICH.—The contract for a new $15,000 building for the Union Telephone Company, which now has its headquarters in Owosso, has been let to T. F. Van Hagel, a Lansing contractor. A new $10,000 switchboard, purchased by the company for the local exchange, is ready for shipment and will be installed when the new building is completed.

PEORIA, ILL.—The last shipment of the $30,000 worth of equipment to be installed by the Central Union Telephone Company has arrived. When it is in Manager Treadway announces that the service will be vastly improved. The Western Electric Company has the contract.

PEORIA, ILL.—Extensive plans for the improvement of the local service by the Inter-State Telephone Company are already under way. Orders have been received for the installation of 1,000 new telephones and as the business has grown to such dimensions that the present equipment is unable to handle it properly, improvements involving the expenditure of over $25,000 will be instituted at once. This will be but a preliminary item, however, and there will be more improvements as soon as the engineers have secured a comprehensive line on the situation throughout the city.

PHILADELPHIA, PA.—The Bell Telephone Company has bought a lot on Curtis avenue, Woodbury, and will erect an exchange building.

PLACERVILLE (EL DORADO CO.), CAL.—The forest service is now in direct communication by telephone with the Ralston divide country. This branches off the Georgetown telephone line at Tunnel hill, eleven miles east of Georgetown, and runs in a northerly direction across the Rubicon River canyon, reaching the Ralston mine; from there it continues on to Lynchburg, which is the headquarters of the ranger district. Another telephone line is being built from Steeley Fork to Leek Spring Mountain, El Dorado county, under the direction of the forest service. Leek Spring Mountain will be used as one of the main lookout points next season, and a man will be stationed there continuously during the fire season.

PONTIAC, MICH.—The need of more telephone lines from Pontiac to Detroit has caused the Michigan State Telephone Company to give the Pontiac exchange management authority to spend over $5,000 for the construction of new toll lines to Detroit. The work will be started in the near future, and rushed to completion.

PORTLAND, ORE.—Permission has been granted to the Pacific Telephone and Telegraph Company to proceed with the construction of its 14-story fire-proof reinforced concrete building at Park and Oak streets.

REDTOP, MINN.—The proposition of moving its central office from Redtop to Malmo is being considered by the East Side Telephone Company. The question of whether or not to build a trunk line to Opstead is being discussed.

RENO, NEV.—Not only will the Pacific Telephone and Telegraph Company surely erect a substantial building in Reno within a short time, according to N. J. Pendergast, but new switchboards and equipment will be installed that will anticipate the growth of Reno for several years.

ROCKWELL CITY, IA.—The Central Mutual Telephone Company at Rockwell City has installed a new switchboard with the latest appliances, and plans soon to observe "guest day," when the public will be invited to inspect the new equipment.

RIVERSIDE, WASH.—J. H. Green, president of the Tunk Creek Telephone Company, announces that a line is to be constructed from Synarep to Anglin.

SAN DIEGO, CAL.—Returning from a six weeks' outing near Lake Tahoe, President Horace B. Day of the Home Telephone Company announced recently that the corporation will begin shortly, an expenditure of about $110,000 on improvements to the local system.

SAULT STE. MARIE, MICH.—What is believed to be the first step toward giving the Soo better telephone service was taken when officials of the Michigan State Telephone Company closed

negotiations for a lease of the vacant store building on Portage avenue east, next to the Sault Savings Bank, for a period of ten years, the lease becoming effective September 1, this year.

SAYRE, PA.—More than $10,000 will be expended for the rebuilding of the toll line from Waverly and Sayre to Towanda, a distance of twenty-two miles. About 317 new poles will be set and over four and a half miles of additional wires will be string.

SELBYVILLE, PA.—A telephone line which connects Selbyville with Williamsville has been completed.

SHERIDAN, WYO.—The construction of a second telephone circuit between Sheridan and Buffalo has been begun and by latter December local patrons of the Bell may talk with the Johnson county metropolis over three different circuits—the two visible circuits and a "phantom" circuit, created by the parallel lines.

SIOUX CITY, IA.—The first telephone line in what is known as the Lyman county strip country has just been completed. It will be extended to Hammill, Dallas and Gregory.

SPRINGFIELD, MO.—According to R. G. Porter, manager at Springfield of the Missouri and Kansas Telephone Company, more than $200,000 has been expended in the building of the big office structure, in equipping the plant and in other extensions of the telephone service preliminary to moving to the new exchange.

TRENTON, PA.—A telephone line has been erected by the State to the heart of the forests in Burlington county, and State Forester Gaskill feels that it will be impossible for a fire to gain much headway before the forest fire brigade will be on the ground. The installation of the line is part of a co-operative plan between the State authorities and local property owners for protection against forest blazes.

WILLOW LAKES.—Work has been begun on extending the Clark County Farmers' Mutual Telephone Company's lines into Willow Lakes. The company now is operating over 100 miles of lines.

YAZOO CITY, MISS.—The Jackson Independent Telephone Company will connect its long distance wires with those of the Mutual Telephone Company at the latter's exchange in Yazoo City. When the connections are made it will give Yazoo City connection with Jackson, Meridian and Hattiesburg and all points along the A. & V. and New Orleans and Northeastern railroads.

MISCELLANEOUS.

ROGERS, ARK.—The Southwestern Telegraph and Telephone Company intends to install a flashlight system and make other improvements, at an expenditure of $30,000.

FLAGSTAFF, ARIZ.—An appropriation of $40,000 for the purpose of building a telephone line from this place to the Navajo Indian School, at Tuba, will be asked of congress.

SHENANDOAH, IOWA.—The long talked of consolidation of the Shenandoah telephone lines was consummated by the purchase of the local Bell lines by the Independent Mutual Company of this city and the sale to the Bell Company of the Mutual toll lines leading out of the city. The Bell exchange will be closed October 1 and the entire service will be operated from the Mutual exchange, including the toll service. The change will necessitate new switchboards, more operators, the rebuilding of many lines, and an increased number of cables.

PASADENA, CAL.—Actual consolidation of the Sunset and Home Telephone Company systems will take effect the first of October, according to Willis N. Eason, president of the Home Company. Engineers and expert workmen of the Western Electric Company are installing thousands of dollars worth of equipment at the offices and working day and night in order to complete the work by October 1, which is the date designated in the ordinance regulating the telephones.

GREENVILLE, MICH.—The Citizens Telephone Company has issued a circular letter to all its patrons that on October 1 an increase in rates will go into effect. It is understood that the rates are in compliance with the Giles law and the advance is made on the grounds that the company is not earning a reasonable return on the capital invested.

VESTA, S.D.—(R. F. D. from Owanka).—It is probable that the connection between the Homestead Telephone Company's line with the Great Western line will be discontinued and connections will be made with the Wasta-Elm Springs line.

NEEDLES, CAL.—The Needles Gas & Electric Company has purchased the local telephone system of the Arizona, California & Nevada Company. A general overheauling of the system is needed.

Thirty-six new telephones are to be added to the Twelve Corners-Mackville Telephone Company's line in Appleton, Wis. At the present time there are 168 phones belonging to the line in use in different farm homes. The treasurer's report shows a balance of $194.

TYLER, TEX.—Certificates of dissolution have been filed by the Pollock and Anegelina Valley Telephone Company and the Durham Telephone Company, both of Tyler.

JOHNSON CITY, TENN.—The Cumberland Telephone and Telegraph Company has a joint office with the Western Union Telegraph Company in this city. The office fronts on Fountain Square.

ARANSAS PASS, TEX.—John Hutto has sold the Aransas Pass telephone exchange to Mr. Covington, recently of Sabinal. Mr. Covington is a prominent business man, and will remain here, being connected with the Hutto-Mound-Tedford Hardware Company.

ATLANTA, GA.—The Cumberland Telephone & Telegraph Company, which has maintained its headquarters in Nashville since its organization, has moved to Atlanta, lock, stock and barrel. Every department head of this company is coming to Atlanta with his family. This means the transfer from Nashville to Atlanta of about 200 employes and with their families about 700 people.

BIRMINGHAM, ALA.—The American Telephone & Telegraph Company is taking a census of the Decaturs in order to ascertain the telephone needs of the city 15 years hence. The work is under the direction of Charles B. Eatherly.

CHEHALIS, WASH.—The city's already extensive rural telephone service has added another farmers' line by the connecting of the Joy farmers line with the local exchange. The "Joy" line is named for George C. Joy, an officer of the Chehalis-Boistfort Telephone Company, of which company the new Joy line is a part. The Chehalis Boistfort Company now includes the Adna, Boistfort, Curtis, Fayette, Pleasant Hill, Wildwood and Joy lines. The last named adds 13 new subscribers to the list. Altogether there are 34 farmers' and suburban lines connected with the local exchange, with over 700 subscribers who can talk to Chehalis free of charge.

CINCINNATI, O.—The Cincinnati & Suburban Bell Telephone Company is now the formal owner of the former St. James Hotel property at the southeast corner of Fourth avenue and Hammond street. This was given by William A. D. Short and other members of the family, a lifehold interest in the same being transferred by Trustee William Worthington. The sale price was given as $125,000. The deal was made by Cleneay, Nourse & Huntington. Architect Harry Hake is at work upon plans for a twelve-story fireproof building.

DEADWOOD, S. D.—A building on Main street now partly occupied by the Nebraska Telephone Company has just been purchased by the company for $15,090. The building will be remodeled and the company will occupy it with its various departments, which have been gradually growing during the past few years, as Deadwood is the headquarters for the division of the western part of the state.

HURLEY, S. D.—At a mass meeting of citizens resolutions were adopted asking that the two telephone companies having lines here entered into agreement whereby the patrons of one system can have free connection with the patrons of the other.

HAMILTON, N. Y.—Notice has been received that the Hamilton Telephone Company, operating to Hamilton and vicinity, Madison county, New York, has sold its physical property and business to the New York Telephone Company for the sum of $11,850, and the Hamilton company has ceased to do business.

IDABEL, OKLA.—Fire destroyed the plant of the Pioneer Telephone Company here.

JOLIET, ILL.—The Interstate Telephone Company is planning to move from its present location in Tenth street to quarters in State street. Several locations are being considered by the company officials.

LOUISVILLE, KY.—Through negotiations, the Fayette Home Telephone Company takes over the plant and exchanges of the East Tennessee Telephone Company in Lexington, long distance toll lines excepted.

RICHMOND, VA.—Mergers: Accomac & Northampton Telephone Company into the Chesapeake & Potomac Telephone Company of Virginia, also merger of the Diamond State Telephone Company into the Chesapeake & Potomac Telephone Company of Virginia.

SALISBURY, MD.—The telephone company's new directory shows that there are 1,089 users of telephones from the Salisbury exchange, the largest number of any town on the shore except Wilmington. Of these 800 are town telephones and 289 country telephones. Cambridge exchange ranks second on the Shore, having 652 telephones. Easton exchange comes third with 373 telephones.

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